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The PBX Market Is Evolving; Are You Keeping Pace?

A Software-Based PBX Can Replace Old Appliance-Based Products With More Features, Lower Costs

NOT MUCH HAS CHANGED in the PBX market in the past 40 years. For the most part, a few big-name companies have dominated the industry, with the primary focus on selling proprietary phone systems, says Nick Galea, CEO of 3CX.

“These phone systems have long suffered from limited operating systems and a reliance on archaic development tools, which has caused a notable lack of innovation in the telecoms sector.”

That all began to change about 10 years ago. “The IT revolution has sent shockwaves through the PBX market, with the more agile software-based companies such as 3CX now beginning to rival the traditional PBX providers,” Galea says.

A Software Revolution

Replacing an older appliance-based PBX with a software-based solution such as the 3CX Phone System can provide a wider range of features, improved security, and easier backup and integration, often at a significantly reduced cost.

Galea says one of the most important advantages of a software-based PBX for Windows is

easier installation, configuration, and updates. “With such a phone system, IT administrators can use their existing Windows knowledge to upgrade the system without needing extensive training or special expertise.”

That familiarity with the Windows operating system makes it easy for IT administrators to apply security patches. Installation is also simplified, with configuration often done in a matter of minutes with auto-provisioning and plug-and-play capabilities of IP phones and gateways.

“This is not the case with proprietary and appliance PBXes, which require costly external technical support and additional downtime to implement upgrades,” Galea says.

Improved Productivity

In a competitive global market, customer service is a key differentiator, Galea says, which is an area where software-based PBXes can excel. You can easily integrate such solutions with



business applications such as CRM and other customer and contact tools, so, for example, you could automatically match a caller ID to a customer name. When a customer calls, her name will appear immediately.

Software-based PBXes also are fairly straightforward to back up. In the event of a hardware failure, Galea says, you can restore your phone system onto another machine in a matter of minutes. If you are running your PBX virtually, you can use the HyperV or VMware backup function to save a

complete copy of your PBX to disk so your data is protected, Galea says. “With a proprietary or appliance PBX on the other hand, a company will be left without a phone system until it can get a physical replacement.”

Save On Long-Term Costs

The simplified installation and maintenance, easier integration with business applications, and quicker backup all add up to a product that is much less expensive to purchase and maintain.

In fact, Galea says that some companies have saved up to 70% on their telephony costs by switching to 3CX Phone System. Galea says those cost savings come from not needing to spend additional resources on training IT administrators and from being able to use IP phones, which, because of open standards and more competition in the IP phone market, are less expensive than those tied to a proprietary phone system. □

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Rack-Level Monitoring

Optimize The Longevity Of Critical Infrastructure By Monitoring Top, Middle & Bottom Temperature/Humidity With The ITWatchDogs WatchDog 15

IF YOU'RE ONLY monitoring your data center's ambient room temperature, you could be missing vital information.

Because temperature and humidity levels can vary throughout a room and even within the rack, that type of monitoring is "blind to hot spots and rapid temperature changes," says Mo Sheikh, director of sales and marketing at ITWatchDogs.

Hot spots in and around equipment can heat faster than room temperature, Sheikh says, potentially damaging equipment even though the

ambient temperature is within acceptable limits. At the same time, high humidity levels can cause condensation to form on critical electronic components, resulting in corrosion or failure.

Monitoring the top, middle, and bottom of each rack provides crucial data on where hot spots exist while monitoring for significant fluctuations.

The ITWatchDogs line of environmental monitors, including the WatchDog 15, start at \$189 and provide that level of monitoring as self-contained units with

onboard temperature and humidity/dew point sensors.

Coupled with ITWatchDogs' T3HD, a three-in-one temperature/humidity sensing kit meant for rack-level monitoring, you can keep an eye on up to 16 racks using a single appliance.

The T3HD comes equipped with a digital sensor input allowing you to daisy-chain multiple sensors rack-to-rack. You can receive alerts via SNMP, email, email-to-SMS, and voice with auto-dialer.

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ITWatchDogs WatchDog 15

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Flexible, Customized Views

DoubleSight Displays Multi Monitor Flex Stands Offer Height, Tilt, Pivot & Horizontal Movement, Holding Up To Nine Monitors On One Desktop



TODAY'S BUSY DESKTOPS hold a variety of computing equipment and, in many cases, multiple monitors. The DoubleSight Displays Multi Monitor Flex Stand fits well in such an environment, whether you're looking for simple ergonomic improvements or better organization.

Unlike other desktop stands, Multi Monitor Flex Stands feature a hinged design, says Dario DellaMaggiore, director of sales and marketing. "The flex design is similar to a human arm, hinged at the shoulder, elbow, and wrist." With as many as nine hinged points, the Flex Stands

ensure any user can customize the setup to fit their needs.

Flex Stands provide the same height, tilt, and pivot options as other stands but also offer horizontal, front-to-back movement up to 180 degrees. "You can actually swing one monitor around 180 degrees to face the person sitting across the desk from you," DellaMaggiore says.

The Flex Stands are available in single, dual, triple, and quad monitor models and fit most popular monitor styles and sizes up 30 inches.

You can stack Flex Stands to accommodate two rows

of monitors, with options for additional height extensions and a notebook or tablet tray. Base options include a grommet and clamp to secure the stand in place, making the mounted monitors less likely to be stolen, damaged, or knocked off the desk.

Despite their extreme flexibility and customization options, the Flex Stands are easy to install. "We ship completely assembled, build with durable metals, and provide a lifetime warranty," DellaMaggiore says.

You can purchase the Flex Stands from DoubleSight

partners such as Staples, Office Depot, Tech Depot, PC Connection, Office Max, and Best Buy for Business. ■

DoubleSight Displays Multi Monitor Flex Stand

- Flexible, hinged design offers extensive customization options
- All-steel construction
- Models ship fully assembled, ready for you to attach monitors



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Document Filters, Search Engines & The Anatomy Of A Binary Format

How The Ability To Review Data In Binary Format Helps dtSearch Instantly Search Terabytes Of Text

WHEN YOU VIEW a document in Microsoft Word, you expect the text to be crystal clear. The same applies when you display a database in Access, a presentation file in PowerPoint, a spreadsheet in Excel, a PDF in Adobe Reader, an email in Outlook/Exchange or Thunderbird, etc. Further, these applications make it easy not only to view the text but also to locate specific words for basic navigation within the file.

But what if you need to search across millions or billions of files? Pulling up each file individually in its associated application would take far too much time. Opening an untrusted document in its native application also creates a risk of virus infection. Instead, you would want a separate search engine to automatically search through all the data at once.

Binary Formats

Just as it is inefficient for you to sequentially retrieve a large number of files in their associated applications, so that process is inefficient for a search engine. Instead, a search engine needs to review data in binary format, bypassing the need to pull up each file in a separate program.

The problem is that file text that looks crystal clear inside its associated

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 - Document filters also available for separate licensing

application typically appears as gibberish in binary format. Take a look at the image at the top of this page for a look at a product description as it appears in Word. The bottom image shows a sample from this document as it appears in binary format.

Returning this binary format to the readable text that appeared in Word requires a lot of parsing. The industry name for the process that parses binary formats is document filters.

Document filters and search engines all parse binary formats to different levels of depth. The parsing process this article describes reflects the dtSearch® product line. While this

article's anatomy of binary formats is a general one, the stages this article describes to unravel these formats may not precisely reflect other product lines than dtSearch.

Binary Format Identification

Before parsing a binary format, the document filters need to identify what type of document or other object the binary format represents. In fact, identifying the right data specification is all-important, as the file specification for Word is nothing like the specification for Outlook or PDF.

Further, the document filters need to figure out the data type of a binary format.

File text that looks
crystal clear inside
its associated
application typically
appears as gibberish
in binary format.

preferably without reference to any document name or extension. For example, suppose a user saves a Word file with an extension of .PDF instead of the Word extension .DOCX. Only by using the binary format itself to identify the data type instead of the extension can document filters effectively recognize and parse this file.

Evolving Specifications & Unicode

After figuring out the data type, the document filters can begin to apply the correct specification to decode the data. File specification data can be enormous. For example, Microsoft's documentation of the .DOC Word

file format alone is more than 600 pages.

The document filters must also take into account the fact that all major data formats continue to evolve. If Microsoft makes a change to the .DOCX Word specification, the document filters have to apply this update for all new Word documents. And the document filters have to do so without interfering with the parsing of existing Word documents.

The next item for the document filters is to identify relevant text encoding. Some documents such as newer versions of Word store data in Unicode. Other document formats can store text in language-specific encodings, which the document filters must identify and translate into Unicode.

Metadata & Recursively Embedded Objects

In addition to parsing the main body of the text, the document filters have to identify and correctly handle other elements of a document, including headers and footers, fields such as subject and author, and even potentially hidden metadata. Then there is the issue of nested objects.

A Word document can embed an Access database, which can itself embed an Excel spreadsheet, which can further embed a PowerPoint.

Document filters and search engines all parse binary formats to different levels of depth. The parsing process this article describes reflects the dtSearch® product line. While this article's anatomy of binary formats is a general one, the stages this article describes to unravel these formats may not precisely reflect other product lines than dtSearch.

The document filters need to recognize and drill through all of the different levels of nested document objects to fully parse the text.

Database & Online Data

It is not only documents that can embed other documents as nested objects. An SQL database can store documents inside BLOB data within the database. An email can attach documents directly or as part of a ZIP or RAR archive. Documents—including standard Office files such as Word documents or emails—can appear online in the context of Web-based static (HTML, XSL/ XML, PDF, etc.) data. Or they can appear within Web-based dynamic data (MS SharePoint, ASP.NET, CMS, PHP, etc.).

The document filters need to handle all of these different data types just to ensure proper handling of documents. And that's not even to mention the surrounding SQL, email, compression, static, and online data itself,

which the search engine needs to handle for comprehensive full-text searching.

Document Filters In Context

Parsing data is just the initial step for a search engine like dtSearch. After parsing the data, the search engine needs to create a search index. The search index itself is simply a programmatic device to enable very fast searching of a wide range of data.

A single search index can hold a large variety of data, including documents, emails and attachments, databases, and other Web-based static and dynamic data. In doing so, the index can enable concurrent or multithreaded

federated searching across all of these different data types at once. After processing a search request from its index, the search engine will return a list of matching files or other data.

The search engine then returns to the document filters to display the complete text of retrieved data. dtSearch products display the complete text by converting data types that are not already Web-ready to HTML for browser-based display. The final step is to retrieve "hit offsets" from the index. The hit offsets tell the search engine and its document filters where to highlight hits in the browser-based data display. 

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AS WITH ANY SMALL server room, floor space is at a premium. And contained in these computer rooms is plenty of high-value technology that needs to remain cool in order to avoid equipment degradation and slow network operation. To meet the broad-ranging needs of server closets and large data centers alike, Uptime Racks has released the Modular Rack Cooling System 13 (MRCS 13) utilizing Rack Solutions racks.

Functioning as a self-contained, air-conditioned computer cabinet, the MRCS 13 helps lower electricity costs through

its unique close-coupled cooling design by reducing the amount of cold and warm air mixing.

This means, “we deliver the cold air in front of the equipment instead of around it, and follow the recommended cold aisle/hot aisle airflow pattern,” says Jim Magallanes, Uptime Racks founder and president.

The MRCS 13 produces 13,000 BTUs per hour of cooling, which is twice as much as standard market systems. As a result, it’s able to support high heat density networks.

Because you can simply move the MRCS 13 from room

to room, attach the ducting to the back of the unit, and plug it into a 115-volt outlet, there’s no need to hire a contractor to install your rack cooling structure. In essence, implementation of the unit takes only minutes, thanks to the plug-and-play installation.

In terms of modular flexibility, the MRCS 13 has the versatility to be used as Rack Solutions racks such as a cabinet, open four-post rack, or two-post rack at various heights. And thanks to its wheel-mounted bottom cabinet, the MRCS 13 can be moved easily to wherever it’s most needed. □



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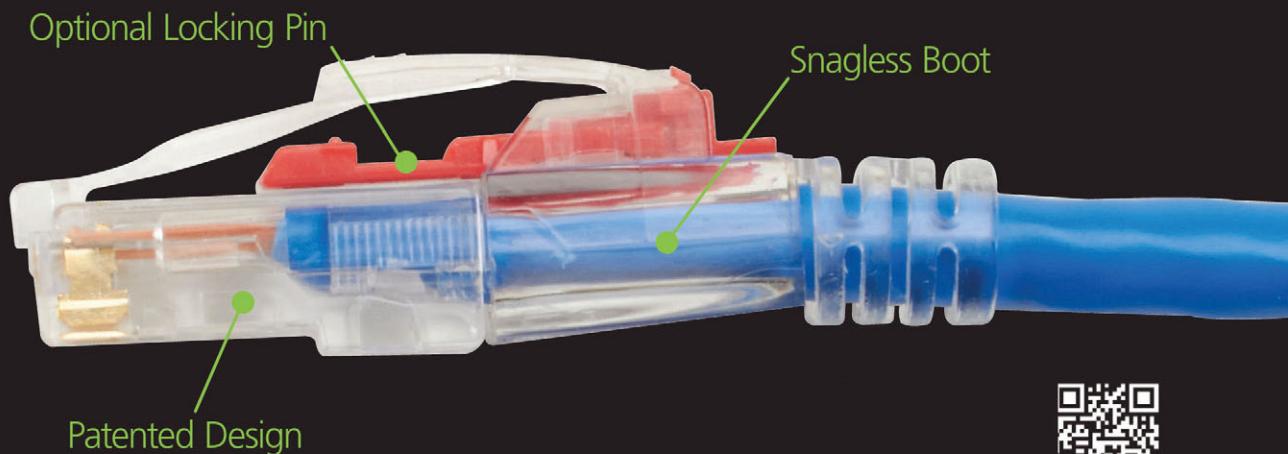
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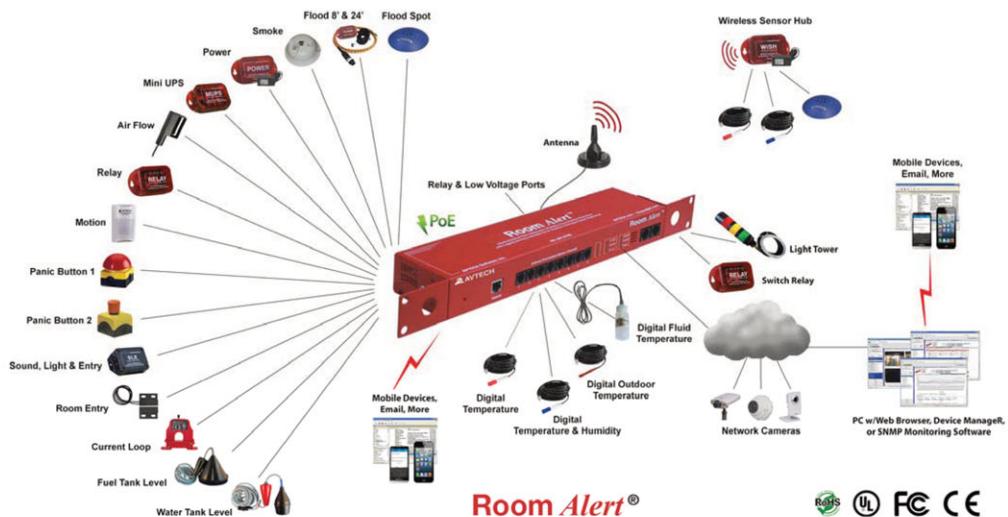
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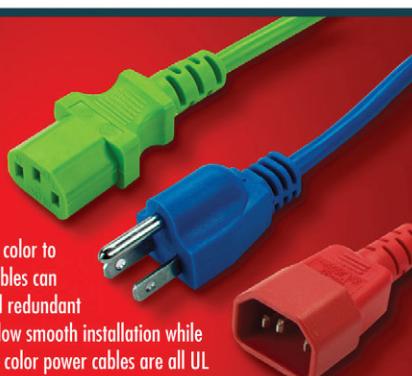
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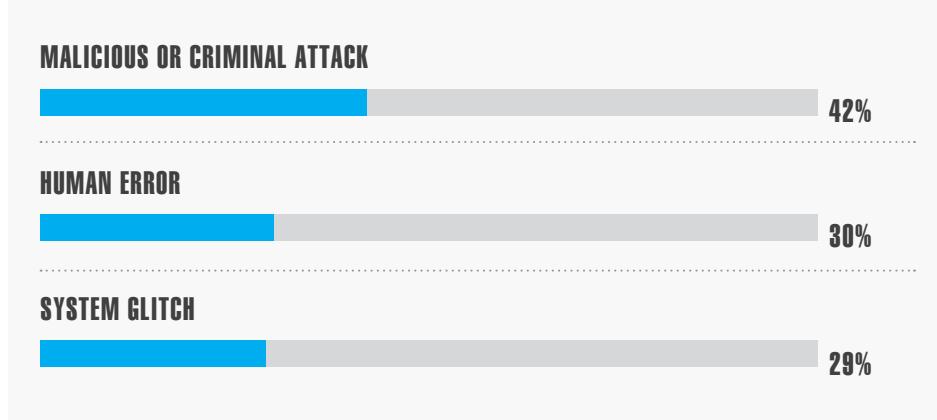
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■ Tracking The Costs Of A Data Breach

The “2014 Cost Of Data Breach Study” from the Ponemon Institute derives insights from personnel within businesses and government agencies that have been through a data breach. According to the report, the average cost to organizations was highest in the United States, with an average cost of \$5.4 million per company in 2013; the projected total for 2014 is \$5.85 million. When asked whether their organizations had security strategies in place for areas often affected by data breaches, 45% say they have such a strategy to protect information assets, 42% to protect their online presence, and 38% to protect IT infrastructure. Looking ahead, Ponemon is most concerned with malicious code and sustained probes, as those threats are increasing considerably when compared to other threats. The chart below illustrates the breakdown of data breach origins in 2013, according to the report.



■ Another Positive Sign For The Economy: Software Spending

The worldwide software market grew 5.5% last year, more than the originally expected growth of 4.3%, with above-average growth in the United States, according to a new report from IDC.

HERE ARE SOME OF THE OTHER FINDINGS:

SPENDING ON APPLICATIONS COMPRISED 50% OF TOTAL SOFTWARE REVENUE.

ADOPTION OF BIG DATA AND ANALYTICS ACCOUNTED FOR MUCH OF THE 13.2% YEAR-OVER-YEAR GROWTH IN SPENDING ON SEARCH AND CONTENT ANALYTICS.

SPENDING ON COLLABORATIVE AND CONTENT APPLICATIONS HAD YEAR-OVER-YEAR GROWTH RATES OF MORE THAN 10%.

WINDOWS 8, VIRTUAL MACHINE, AND CLOUD SYSTEM SOFTWARE ADOPTION CONTRIBUTED TO 8% GROWTH IN SYSTEM SOFTWARE SPENDING.



■ CEOs Ready To Invest In Longer-Term Growth

It's a “risk on” period for CEOs, according to Gartner, where CEOs perceive risk is lower and are prepared to invest in longer-term growth. About a third of respondents to a recent survey cite growth as their top priority. “The next step will be for CEOs and CIOs to work together to match the use of modern technologies to the specific kind of growth that the business is trying to win,” says Mark Raskino, vice president and Gartner Fellow. IT-related issues were ranked as a top priority by 7% of CEOs surveyed, with about half of those IT priorities involving digital; online; or modern technologies such as social, cloud, and mobile, Gartner reports. The economy, regulation, and an aging population are among the top concerns reported by CEOs.

■ Smartphone Ownership Takes Lead Over Basic Cell Phones

For the first time ever, more United States households own a smartphone (64%) than a basic cell phone (51%), according to a recent study by the Consumer Electronics Association (CEA). Most consumer technology purchases this year will involve mobile-related products, the CEA survey found, with 27%

of households planning to purchase a smartphone this year; 18% planning to purchase a laptop, notebook, or netbook; and 16% planning a tablet purchase.

■ **Business Intelligence Systems Popular**

The worldwide market for business intelligence and analytics software grew 8% from 2012 to 2013, according to Gartner, with revenues rising from \$13.3 billion to \$14.4 billion during that period. Numerous factors, including confusion about how best to use analytics with big data, have interfered with greater growth, Gartner notes. "Overall, just like last year, the market is shifting gears, which is keeping growth in the single digits," says Dan Sommer, research director for Gartner. "At the same time, paradoxically, we're at the cusp of a series of tipping points, which will facilitate unprecedented interest and adoption of analytics."



■ **CompTIA: Business Confidence Looking Up**

The CompTIA "Industry Business Confidence Index" measures the current impression of the United States economy among IT executives. The index for the second quarter indicates a positive confidence trend, having risen 2.7 points since the first quarter to 61.3 on a 100-point scale. The overall index increase is modest compared to the 8% jump in the "disruptive technologies and business

models" area. "Two areas—cloud computing and mobility—are key factors," says Tim Herbert, vice president of research for CompTIA. "With such far-reaching impacts of these technologies, firms across the IT channel are still working through how to best meet the needs of their customers and their businesses."

■ **Tablet Shipments Slow**

Sales of tablets might be slowing down after a long period of fairly dramatic growth. In the first quarter of this year, shipments were down 35.7% compared to the fourth quarter of last year; compared to a year ago, shipments were up just 3.9%, according to the IDC "Worldwide Quarterly Tablet Tracker." Tablets with all operating systems and screen sizes were affected by the slowdown. "The rise of large-screen phones and consumers who are holding on to their existing tablets for ever-longer periods of time were both contributing factors to a weaker-than-anticipated quarter for tablets and 2-in-1s," says Tom Mainelli, IDC program vice president, devices and displays. Commercial growth was not robust enough to offset the slowing of consumer shipments, he says.

■ **Internet Of Things To Impact Security**

The Internet of Things (IoT), meaning the interconnectedness of countless devices via the Internet and other networks, "is redrawing the lines of IT responsibilities for the enterprise," says Earl Perkins, research vice president at Gartner. Perkins offers many security recommendations to organizations embracing IoT-related technologies, including a fundamental bit of advice: "start small" and build based on specific IoT projects and use cases. "Governance, management, and operations of security functions will need to change," he says, "to accommodate expanded responsibilities, similar to the ways that bring your own device (BYOD), mobile, and cloud computing delivery have required changes—

but on a much larger scale and in greater breadth."

■ **Semiconductor Manufacturers To Invest In Equipment**

After a somewhat-difficult 2013, semiconductor manufacturers will increase spending on capital equipment by 12.2% this year, according to Gartner. Overall capital spending will increase 5.5%, with a "generally increasing pattern" through 2018, the research firm reports. Logic spending is the key driver for capital spending, Gartner notes, but a drop in demand in mobile markets means memory will provide most of the growth in capital spending through 2018. Gartner's report shows that capital spending is largely concentrated among the top three semiconductor manufacturers.



■ **Data Privacy Concerns Growing**

Research firm GfK surveyed 1,000 United States consumers and found that while 88% are concerned to some degree about personal data privacy (59% say they are more concerned than they were a year ago), only 48% say they are acting on those concerns by changing their online habits. Of course, the unknown factor here is the extent to which that 48% already had good habits related to online commerce, banking, and similar activities. The survey found that health care was the most trusted category of online services (70% say they trust hospitals, health care providers, and the like); social networks (at 39%) are the least trusted.

Does Renewable Energy Fit Into Your Data Center?

Do What You Can Now With An Eye Toward Doing More In The Future

MANY DATA CENTER managers are interested in implementing renewable energy because it promises to not only cut costs but also help the environment.

However, it's important to remember that although solar, wind, and other renewable energy technologies are attractive, they may not be practical for every data center. In fact, as you do your due diligence, you may find that you should focus more on efficiency projects now and wait until renewable energy is more practical for your facility.

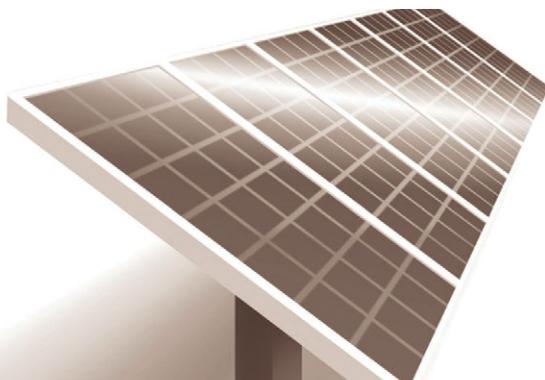
Cost & Practicality

When it comes to utilizing renewable energy in an average sized or smaller data

center, there's bad news. For many companies, it's simply too expensive and impractical to build your own solar or wind farm to power an entire facility, and it's usually reserved for only the largest organizations that have the resources and space to fully embrace renewable energy.

In addition to cost and practicality, you also have to consider the location of your facility and whether the climate supports the type of energy you'd want to use in the first place.

For example, Sophia I. Vargas, a researcher at Forrester Research, says that a lot of renewable energy farms are in the Midwest where space is plentiful and there is



abundant wind, in particular, to facilitate larger wind farms.

Kelly Quinn, research manager at IDC, agrees that geography is a major factor. "In the Northeast, you're probably not going to deploy a solar array to try to augment your power supply because we don't get enough sun, whereas in Phoenix you might try that," she says. "On the converse side of that, in New England, you would want to use ambient cooling from outside air to reduce your power costs because we have so many cold days during the year."

For that reason, the average data center should focus on projects that fit well into the geographic footprint and take advantage of certain weather conditions, but even then, the installations themselves may still prove to be too expensive.

Onsite Generation Potential & Challenges

To take advantage of renewable energy, the average data

center needs to focus on supplementing traditional energy sources rather than trying to power the whole facility with solar or wind power.

Vargas says putting solar panels on the roof is generally the simplest way to do that; some companies will actually build installations out in a field. She adds that setting up a wind farm, no matter how small, can come with headaches as you need to follow government regulations and actually "get on the grid and get the approval."

Quinn says many of the data center managers she's talked with don't believe that solar is cost-effective enough yet to warrant a deployment. Wind and hydroelectric power are probably the two most promising renewable energy technologies today, she says. They aren't "ready for prime-time deployment, but they're getting there."

In addition to wind, solar, and hydro, fuel cell technology is

Renewable Energy Adoption Will Take Time

It will take time for renewable energy to become practical, says Sophia I. Vargas, a researcher at Forrester Research. "There need to be more incentives on the regulatory side to make this more prevalent and more interesting for companies to do, because it still has a pretty high cost barrier." She says that in the coming years, there will hopefully be more incentives to help move adoption along and make renewable energy possible for more than just the largest enterprises.

"The tech is there, but because it's expensive, companies are less willing to do it," Vargas says. "Because data center investments are so expensive already, it's not even on the table because they already have to make the case for choosing a particular facility spec on its own vs. saying I also want to invest in this other million-dollar thing that's going to power it."

another solution some companies may want to consider.

The forecast on fuel cells, however, is decidedly mixed as some analysts see them as a more compact alternative to larger solar and wind farms and others say the total cost of ownership can end up being much higher than originally expected.

Third-Party Providers

With all of these technologies, you need to look at the needs of your data center and decide whether you want to take the risk of going for onsite generation or opt for teaming up with a third-party provider.

Although renewable energy will continue to mature and get more practical, Quinn says third-party providers can help you take advantage of already established wind and solar farms or hydroelectric facilities. The benefit here is that you don't have to worry about deploying a large-scale project yourself and taking on the cost, but instead can sign a contract with a renewable energy company and meet your budget and social responsibility goals at the same time.

"Instead of looking at what we need to build out a farm, the question should perhaps be, 'Who do we need to partner with to buy the renewable energy now?'," Quinn says. "That's going to vary state to state because of regulations

regarding utilities. I would go back to looking at the bigger picture of energy savings," she says, including where you can implement savings and then looking to a partner you can work with to access renewable energy now as a service as opposed to going out and undertaking deployments of actual equipment and farms for solar or hydroelectric generators.

Focus On Efficiency

If you're considering renewable energy as a way to boost efficiency, Vargas offers some lower-hanging fruit for you to consider with your facility. For instance, you can scale up your virtualization projects for better efficiency, implement hot-aisle/cold-aisle containment for better air circulation, plug holes in your facility to minimize heat or

cooling loss, take advantage of free-air cooling when possible, and keep the new ASHRAE standards in mind that let you run your data center at a warmer temperature than what was traditionally accepted, she says.

"These things are a little easier to accomplish and a lot easier to convince the higher-ups because what they're doing is directly reducing your operational costs vs. having to invest in something outside to reduce those costs." 

Secondary Energy-Saving Projects

In addition to finding ways to improve efficiency in your facility, there are also some changes you can make to reduce your overall power consumption rather than trying to force a renewable energy implementation. "We've heard of companies that take the heat output from their data centers and recycle it through their office building," says Kelly Quinn, research manager at IDC. This type of approach makes it so that you can use that air to heat your building rather than having to turn on heaters during the colder months. "People tend to get caught up in the hype of 'we need to deploy fuel cells and we need a solar farm,' but if they step back and look at the day-to-day stuff, there's a lot they can do."

BONUS TIPS:

Not A Fit For All

It warrants repeating that renewable energy may simply not be a fit for your data center if you don't have the financial resources for the implementation and upkeep. "The capital expenditure required for it can be a little bit daunting, particularly for small data centers," says Kelly Quinn, research

manager at IDC, "and then it's a long time to achieve ROI on the investment itself."

Make A Statement

Sophia I. Vargas, a researcher at Forrester Research, says saving money is certainly one aspect of renewable energy, but for many companies it's more about making a statement. "Obviously you are going to save money and save the

environment, so it's a win-win in both scenarios, but for the most part, when enterprises are making decisions, power is a key driver of operational, so if it's more expensive, that might not be a viable option for them," she says. "I think it's more about the branding and initiative for the company. They want to make the commitment to reduce their overall energy or carbon footprint."

Why You Should Consider Software-As-A-Service

Make Sure SaaS Meets Your Business Requirements, Then Get Started

COMPANIES ARE LOOKING to cloud and software-as-a-service (SaaS) offerings more than ever before. “Adoption rates for SaaS and other cloud software have really increased over the last few years, and spending in SaaS represents a significant percentage of the growth in the overall software market over the next five years,” says Benjamin McGrath, research analyst at IDC.

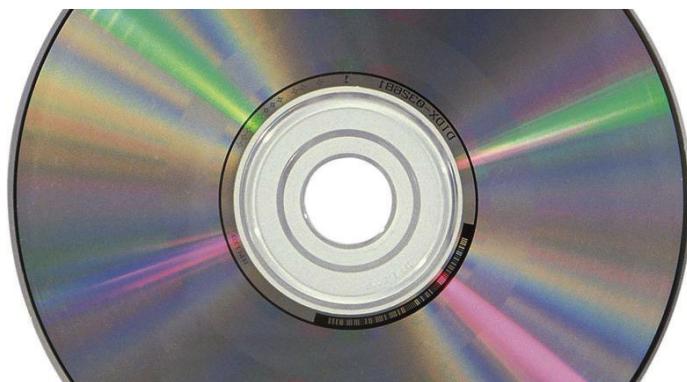
With the market moving in this direction, it’s important to decide whether your company could benefit from moving some applications offsite to a third-party provider. To aid you in the decision-making process, here are a few tips that will show you how SaaS works, potential pros

and cons, and what to look for in a SaaS provider.

How It Works

SaaS is one of the three most popular categories of cloud service that most people think about, says TJ Keitt, senior analyst at Forrester Research. The other two are platform-as-a-service (PaaS) and infrastructure-as-a-service (IaaS).

“In your own data center,” Keitt says, “the infrastructure would be the servers upon which all things run, the platform is the development environment and all of the development tools necessary to build applications, and the software is the application that people use. SaaS is a method of delivering applications to



organizations without the organization having to host the application on its own premises.”

There are two primary ways that a vendor can deliver a SaaS application. The first is in a multitenant environment where “the vendor has created an infrastructure in which many companies share an instance of the application,” Keitt says.

The second delivery model uses a dedicated infrastructure, which means that “each instance of the application, and in many cases the server, be it physical or virtual, is dedicated to one client.” If you have the option of choosing one model or the other and want to move a particularly sensitive or mission-critical application over to a SaaS provider, a dedicated environment would offer more privacy and security.

Major Benefits

There are quite a few ways SaaS deployments can benefit companies, but perhaps

the most readily apparent is the “elastic resource scaling and elastic use-based pricing,” McGrath says.

“Users can rapidly scale up or down their service usage, allowing for more flexibility. And with that comes use-based pricing, where customers only pay for what they use.” He adds that this scalability allows for “faster access to technology and can create revenue-generating services faster.” And by only paying for what you use, SaaS “might allow for customers to save money.”

But for small and medium-sized businesses, there are a few unique benefits to SaaS that can help level the playing field.

For instance, smaller organizations can have access to technologies that were once only available to large enterprises because of licensing fees. Plus, SaaS applications can typically be deployed more quickly than on-premises alternatives and are simpler to

Determine If Existing Complexity Is Necessary

TJ Keitt, senior analyst at Forrester Research, says some companies turn away from SaaS applications because they think of their in-house software as too complex to fit into the SaaS model. Instead, he suggests looking at your applications to determine whether the level of customization and complexity in the infrastructure is required in the first place.

“The real question is, ‘Are the things that we did before necessary to move our business forward?’” Keitt says. “If the answer is, ‘No, we don’t need 3,000 Lotus Notes applications’ or, ‘No, we didn’t need this level of customization in our CRM system and what the people require is actually a lot thinner,’ it should help smooth the path into a lot of these services. But it requires a long hard look at why your infrastructure is complex and whether that needs to be perpetuated going forward.”

run in many cases, so that also makes it possible for smaller companies to “remain competitive against incumbents in their network” as well as larger organizations in general.

Potential Drawbacks

Although there are many benefits, there are also potential drawbacks to SaaS usage. For instance, McGrath says that some end users have security concerns as well as other issues related to regulatory and compliance issues. And there’s always the potential for downtime at the third-party facility, which could lead to an application being inaccessible for a certain period of time.

Keitt says there are some limitations to SaaS solutions, meaning that you’re likely to see more features and capabilities in an on-premises solution than one hosted in the cloud. These limitations are often caused by insufficient browser environments and multitenancy issues and shared resources, as well as how much customization is allowed in a SaaS solution. “[Vendors] can’t allow, even in a dedicated environment, wild swings or wide degrees of variation in the infrastructure so that it becomes unmanageable,” Keitt says.

Choose The Right Vendor

When choosing a SaaS Vendor, Keitt says you should

look at it as though it were a three-legged stool.

The first leg deals with security and compliance and whether the vendor and its facility can meet your company and industry regulatory standards. The second leg is administration and whether the service’s “admin console provides enough control over the application so that you can configure it in the ways you need for it to fit within your processes,” Keitt says. And the third leg is your internal IT competency and whether you understand the technology well enough to manage it.

“If you take that perspective about what you absolutely require based on your regulatory environment, it will go a long way in helping you make the decision between

a smaller or larger vendor,” Keitt says.

“The things that can be subsumed under your requirements are just the security and policy bits, but also your requirements for certain levels

of customization, integration back into legacy systems you’re going to keep on-premises, and even custom development. How much custom code can we run alongside or within this cloud application?” **P**

Companies Of All Sizes Can Benefit

When it comes to implementing SaaS applications, companies of all sizes can benefit and should consider implementation as long as it makes sound business sense. “Small and midsized organizations are considering using business applications delivered via SaaS in order to build revenue-generating products and services faster and improve resource utilization, leading to an increase in revenue,” says Benjamin McGrath, research analyst at IDC. “Larger organizations are more driven, on average, by bottom-line benefits, such as reducing the size of the IT budget and potentially reducing headcount, but in recent years the SaaS model has provided more top-line benefits and that’s what’s leading a lot of smaller organizations to consider a SaaS delivery model.”

BONUS TIPS:

Take Inventory

Companies that have already implemented some SaaS should “take an inventory and run a thorough analysis of the costs and benefits of that usage and use that to determine whether to expand the use of SaaS-based solutions,” says Benjamin McGrath, research analyst at IDC. Then, he says, you should

“identify your most pressing IT needs” and decide if a SaaS solution could fill any gaps. Don’t implement SaaS for the sake of SaaS, but instead focus on areas that need improvement and move on from there.

Pick Apps Wisely

To make sure you get the full benefit from SaaS, you should make sure you choose the right applications. For

instance, TJ Keitt, senior analyst at Forrester Research, says that SaaS vendors offer “collaboration applications, human capital management applications, broad-based ERP applications, and CRM technologies,” among others. But you should look at the applications you use and determine whether they should remain onsite or can be moved to the cloud to save internal resources.

How You Can Prepare For The Internet Of Things

Go Beyond BYOD To A Connected World Of Smart Objects & Technologies

EXPLAINING THE evolution of the Internet of Things (IoT) is akin to describing the universe in one sentence: You can define it, but you can't do justice to its vastness using a simple description.

Although we may now be more familiar with the IoT, along with its impact on connected devices in the enterprise, there's much to prepare for in terms of network capacity, security, access, and monitoring. We'll dive deeper into the complexities of the IoT.

Best Practices: To Be Determined

Network capacity is one of the timely topics of discussion in the IoT conversation. But Paul Teich, CTO

and senior analyst at Moor Insights & Strategy, says it's still early enough in the deployment of the IoT that the best-practice templates for capacity planning haven't yet been developed.

"Network, storage, or compute capacity—they will change over the maturity cycle of an IoT deployment as well," Teich says. "We believe that capacity is a bit of a red herring. The important quality is service assurance: Will your network behave as specified in a service-level agreement (SLA) as your IoT deployment evolves?"

In terms of network performance, Ralph A. Rodriguez, CEO and chief research officer at Blue Hill Research, says large organizations (or multiple

The IoT Is Not The Same As BYOD

Although the Internet of Things (IoT) involves the interconnectivity of smart devices, these devices don't necessarily fall under BYOD policies. "IoT edge devices are very different than smartphones, tablets, and PCs in that people cannot install software on them to begin with," says Paul Teich, CTO and senior analyst at Moor Insights & Strategy.

With that in mind, Teich says it should be a given that you're encrypting data stored on and between devices as well as across networks. "We have to ask how much of a threat a building lighting control system, for instance, or a vehicle telematics system for that matter, would present to a back-end enterprise data storage system." He adds that a "set of well-defined APIs and access controls" should prevent data breaches on IoT devices.



data centers) have a few questions to answer about in-bound IoT traffic: "Where is it coming from? Do I trust it? And do I have the ability to detect what kind of 'thing' it is?"

What's The Practicality Of So Many Things?

Within this convergence of the digital and physical domains, a broad range of smart products, services, and related technologies will emerge as part of the IoT.

With billions of units comprising the IoT in the next six years (26 billion installed units by 2020, according to Gartner), IT managers should expect the IoT to transform into what's being called the Internet of Everything (IoE).

Among the many smart objects and technologies that will make up the IoT (and ultimately the IoE) are medical devices, recognition sensors, point-of-sale terminals, fitness-related devices,

automotive applications, and sensor-connecting routers.

On a potentially a city-wide scale, urban infrastructures will be able to incorporate monitoring technologies for traffic congestion, lighting, and waste management.

Moreover, new controls will be incorporated into quality control processes, indoor appliance automation, and the retail market—innumerable use cases are possible.

What About VPN?

Most IoT-enabled devices don't have VPN capabilities, so you will need to address that significant connectivity issue, says David Monahan, Enterprise Management Associates research director.

What makes VPNs fairly unusable on current devices, Monahan says, is they don't have significant security "or in many cases foundational security constructs we see in PC and mobile devices because



they are Internet-enabled out of convenience or novelty in many cases."

In terms of what next-generation security looks like in a world with the IoT, Teich says IoT data should be encrypted at rest in a device's storage and in motion between devices. In essence, devices should be tightly controlled, he says.

Teich also offers the following questions for access management: "Who can administer what aspects of a device, and who has legitimate access to a device's data? Who certifies the software, how are the certificates handled, [and] is there a secure runtime environment on a device?"

Although VPNs are designed to protect users who communicate from personal endpoints, he says, they can be overkill for many embedded IT endpoints.

Ready Your Enterprise For Significant IoT Growth

The current selection of IoT management solutions aren't fully developed at this time, but Blue Hill Research's Rodriguez says that there are a lot of companies on the fringe identifying problems that need to be solved.

In light of this fact, the IoT marketplace hasn't yet reached the phase in which leaders are producing standardized IoT equipment.

"It's not quite there yet. It feels to me that we're talking about 1,000 days. We know it's coming; we can imagine out loud all the sorts of devices you can enable," Rodriguez says.

But, he asks, how will all of these devices connect within this new system of networks? "Are we talking classic IP? Will it be NFC? Will it be Bluetooth? Depending on how they connect to your network, it's a different problem to solve."

Furthermore, when manufacturers eventually determine the most effective way for all the "things" to talk to each other, leaders will have a network of devices that will help them take connectivity to the next level (or to the IoE).

"I'm really curious as to who will be the new dominant players . . . those folks

who understand those things and start to cobble them together," Rodriguez says. Ultimately it may not be a

corporate manufacturer that figures out the IoT, he says, but rather it could be something completely different. **P**

Understand How Connected "Things" Talk & Listen

IT managers don't want to overlook how things within Internet of Things (IoT) system networks can talk to and interact with each other because it's paramount to avoiding compromise, says Enterprise Management Associates Research Director David Monahan. "Some may not be overly concerning to individuals or organizations initially, but we need to understand what they could reveal," he says. "Another way of looking at the devices out there is by the type of issues they expose. Areas like privacy, security, or life-level threats." For instance, Monahan says a power grid can be a privacy or life threat. Similarly, pacemakers and insulin pumps are privacy-related but are much more of a life-related threat. "Most IoT issues are seen to be privacy more than others, but if compromised, could be used as a jump point for attackers, which brings them into the security realm."

BONUS TIPS:

Do You Trust A Machine?

Ralph A. Rodriguez, CEO and chief research officer at Blue Hill Research, says one challenge for enterprises regarding the IoT's future is that people will have to determine "to what degree do I trust [the IoT] from machine to machine?" Behind bandwidth, Rodriguez says, "it's going to be devices or future routers that are able to

sense, decide, and respond accordingly to policy. Sort of like what's happening in the enterprise around BYOD, except for this is on a massive scale, so you're going to have to automate it."

The IoT Is More Than A Network Connection

"There isn't a single IoT network," says Paul Teich, CTO and senior analyst at Moor Insights & Strategy. "The IoT

is a system of systems, and they are connected by heterogeneous networks. Network capacity and SLAs aside, how does IoT data enter a data center?" Teich says the network interface to enterprise storage and analytics is often overlooked. It's what's called data ingress, he adds. "As an IoT solution scales, data ingress is where network meets data center and is a critical piece of the IoT solution."

Make Sure You're Ready For Software-Defined Networking

SDN's Role Is Becoming More Clear; If It Isn't Already On Your Radar, It Needs To Be

SOFTWARE-DEFINED networking seems to simultaneously still be emerging while also nearing the end of its hype cycle.

Joe Skorupa, Gartner vice president and distinguished analyst, says we'll see SDN mainstream adoption begin this year and into next, but some organizations have yet to dive in to SDN. They shouldn't panic. "It takes a while to get your arms around it," he says. "This will take a few years to roll out, and that's OK."

Although most organizations understand SDN will likely play a prominent role in future data center operations, many remain uncertain about exactly how.

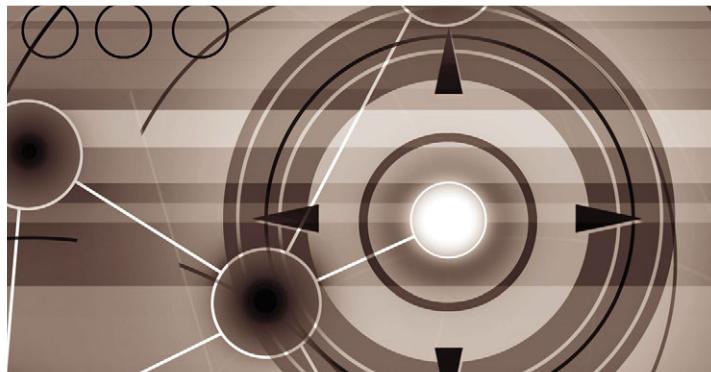
Why SDN Matters

Clifford Grossner, directing analyst at Infonetics Research, sees SDN as a "horizontal technology" that, long-term,

will benefit all enterprises. Short-term, enterprises with large-scale data centers where automation can bring the most immediate benefit have the most to gain. Following data center deployments, enterprises will apply SDN to LANs, and already we've "seen significant use cases providing security and unification of wired and wireless networks and enabling BYOD," he says.

Grossner defines SDN architecture and taxonomy as including a data-forwarding plane (physical and virtual), control plane, and network-aware applications.

Inherent to SDN is a method to abstract and separate the switch control plane from the data plane that has the potential to drive new efficiencies, enable more scalable methods for defining virtual networks, and simplify



support for multitenancy, he says. SDN also includes a method (APIs, PKIs, and specialized protocols such as OpenFlow) that application and external controllers can use to request network state information or services, he adds.

Because of the tight linkage with hardware and software involved with networking that existed in the past, Skorupa says someone who innovated an interesting networking ability had to raise millions of dollars to build his own switches and routers in order to sell that interesting software. Today, a group of people in a garage can write an SDN app that "does really cool stuff" but runs on top of controllers from numerous vendors, eliminating the need to raise millions. SDN "opens up the possibility for innovation in a way that networking has never seen before," he says.

Barry Cousins, senior consulting analyst at Info-Tech Research Group, says with

Key Points

- Enterprises should at least be investigating SDN and what multiple vendors are doing.
- Consider rolling out SDN deployments slowly, including initially in testing labs with one application or project.
- SDN will likely require networking personnel to work more with other departments to strategize how the network can best serve the business.

recent advances in server, client, and storage virtualization, network changes are the bottleneck. "SDN will mostly remove that bottleneck and expose the underlying importance of analysis, design, security configuration, process, and governance," he says.

Near-term possibilities are more tactical than economic, he says. Long-term, organizations that require significant

Get Started

Joe Skorupa, vice president and distinguished analyst at Gartner, says within networking "we've built a culture of the hero" that celebrates "the person with 87 certifications" who fixes problems at 2 a.m. but who "made the mistake to begin with" because he doesn't know much about the business he's supporting. "They operate in a silo. They don't document anything. They don't automate anything. There's no way of training anyone new except by sitting at the elbow of the person who does it," he says. SDN requires working with other departments, and developer, security, application performance management, and other skills will be more important.

responsiveness will rely on SDN for rapid reconfiguration. "If you like risk, SDN will be the gift that keeps on giving because it will be much harder to assume 'set it and forget it,'" he says.

The Possibilities

Much of the hype that's been around SDN to date relates to enabling a higher level of network automation. Skorupa says to expect third-party applications to surface that introduce interesting abilities beyond automation. Additionally, we'll see integration with business process and business policy driving network configuration. Companies will make hardware choices in which they very well may have a multi-vendor hardware deployment but with one vendor for the controllers, he says.

Grossner says SDN's potential to enable automation for data center networks will drive a new, high-level architecture for networks and applications.

"SDN enables integration of the network with orchestration platforms for automation of the entire data center across its three essential elements of compute, storage, and the network," he says. "SDN also enables coordination between applications and the network, something that does not occur in current networks."

Mike Fratto, principal analyst at Current Analysis, points to more efficient use of network capacity, particularly in data centers, as one application of SDN. Others include better instrumentation and troubleshooting and the ability to apply more robust and reliable network policy on a per-user basis.

What To Know

Don't "go too big, too fast" with SDN, Skorupa says. Look beyond what your existing vendor is doing with SDN and explore innovations others are producing. Some vendors are taking an overlay approach with SDN, for example, that enables using some components organizations already have.

That said, doing some network redesign/re-architecting is OK, Skorupa says. An organization can start with one application, for example, redesign that part of the network appropriately, and migrate to SDN a little at a time.

Compared to the past, Fratto says, speeds and feeds are now less important. "What's important are features that networking isn't used to evaluating, such as the APIs that are exported," Skorupa says. "The breadth and depth of APIs, the number of integration partners in adjacent technology spaces, and the level of integration" are issues IT must know, he says. 

Action Plan

Inquire. Organization leaders should ask such questions as: What's the obvious benefit of SDN in my network? Is it easy to deploy? Is there a measurable return on investment?

Start. Begin seriously evaluating SDN options from multiple vendors.

Go slow. Start with small-scale proofs of concept in enterprise labs or restricted production deployments.

Pilot. Consider getting a small-scale SDN pilot up and running with developers in order to achieve reaching both development and test levels.

Prove. After proving SDN at a reasonable scale, roll it into production one application or project at a time. For example, build a new rack or pod of servers initially for a virtual desktop infrastructure deployment.

Top Tips

Investigate. Understand what your vendor and integration/technology partner's SDN road map is, but look also at what other vendors are doing, including startups.

Make time. Invest in education and set aside time to allow staff to learn and think about SDN. Additionally, locate a VAR or consultant that's training its engineers in SDN that might lend future support and assistance.

Realize the potential. Any organization with a network should be researching the upcoming changes to skills and processes that SDN will drive.

What To Look For In An Enterprise Firewall

Understand Recent Industry Changes Driving Firewall Purchases

SHORING UP THE ENTERPRISE perimeter against attackers is a constant battle that requires staying current both on attack varieties trying to circumvent defenses and the actual defenses being employed. This includes the enterprise firewall.

For example, since 2010, says Adam Hils, Gartner research director, network security, “we’ve witnessed the rise of the next-generation firewall [NGFW].” The following discusses the NGFW’s role in enterprises, as well as other current information regarding enterprise firewalls.

What's Changed

As the firewall market has evolved in recent years, Hils says network intrusion protection, application control, full stack inspection, and other security functions have been provided from within NGFWs. The firewall market

has also largely absorbed the SSL VPN market. “Eventually, the NGFW will also subsume much of the standalone network IPS appliance market at the enterprise edge,” Hils says.

Today, NGFWs secure less than 20% of enterprise Internet connections, Hils says, though this will climb to 35% of the installed base by year’s end, with 70% of new enterprise edge purchases being NGFWs.

Additionally, to fight current threats, firewall vendors are packaging advanced threat defense solutions with firewalls. The promise is that firewall platform vendors can provide a solution “good enough” to obviate the need to make major investments in a best-of-breed specialized tool, Hils says.

Derek Brink, Aberdeen Group vice president and research fellow, says Aberdeen benchmark research studies show 100% of respondents



have deployed a network firewall. More than four of five have also deployed additional security technologies, and nearly three of four perform regular network vulnerability scanning.

Although these statistics illustrate a concept of using multiple security layers to support or reinforce one another, they also illustrate there’s been “many open paths through traditional network firewalls that most companies have augmented with complementary technologies” on the network and at endpoints to address what traditional firewalls can’t.

Brink says a growing problem is that the traditional signature-based approach for these complementary technologies is stressed to keep pace with attacks.

Thus, he says advanced abilities such as behavioral analysis and behavioral inspection of packets to decode protocols are increasingly important features

of advanced IPS used in conjunction with firewalls.

He says another popular option is using one network appliance that integrates multiple network security technologies (firewall, intrusion detection and prevention, VPN, etc.) and provides a unified threat management interface.

“The bottom line is that the definitions of network security solutions have been changing to reflect their changing technical capabilities, with a little bit of overlap and marketing-driven confusion as the unfortunate result,” he says.

See The Signs

Malware coming in and data going out is one indication that the current firewall might be in need of updating, says Bob Tarzey, analyst and director at Quocirca, but it also points to the fact that firewalls are now just one piece of a bigger security solution that must focus

See The Landscape

Aberdeen Group Vice President and Research Fellow Derek Brink says companies are changing how they deploy firewall technologies. Although Aberdeen Group research indicates network security solutions reflect a very high penetration, a closer look “shows very high growth for network security in outsourced/managed services models,” he says. Growth for traditional in-house deployments of the same network security solution categories “is very low or even in slight decline, as companies shift from in-house to managed,” Brink says.

more on identity, content, and threat-analysis services.

Hils says if an option to turn on IPS functions is missing, your provider is falling behind. Without a variety of high-availability options available, you expose your organization to risk, he says.

Overall, ensure your vendor has virtualized firewall versions available that meet your data center needs for a firewall's life cycle and has a coherent software-defined networking (SDN) approach in its road map.

What's Important

Today, Web application firewalling is becoming a more important feature for protecting Web servers against attacks, says Jessica Ireland, Info-Tech Research Group consulting analyst. Granular Web application control and encrypted data inspection—specifically decrypting and re-encrypting SSL and secure FTP traffic for potential issues—are also important features.

Ireland recommends ensuring that the firewall can block what it should at a high rate and that data loss prevention is present to restrict loss of sensitive/privileged data. Tarzey says because serving users today requires greater intelligence, content must be able to enter and leave an organization via multiple communication channels.

Therefore, the firewall must be able to work alongside identity and data protection measures, he says.

Beyond traditional firewall criteria serving as a performance baseline for admission, Hils says enterprises that are considering an NGFW at the edge should consider how turning on IPS, application control, URL filtering, and/or SSL termination will compromise performance.

"Part of the feature selection dance is understanding what specific use cases you're trying to address," he says. "Do you want to collapse your IPS platform into your edge firewall? Can your organization use application control?"

Hils says that centralized management can't be overemphasized. "If it's impossible to administer changes efficiently for a complex network, then firewalls will prove operationally burdensome and will eventually result in security failures," he says.

Size Up Vendors

Feature-wise, Ireland says, there isn't much that separates vendors' firewalls, leaving usability and price as main differentiators. Check for intuitive and comprehensive interfaces and the ability to create custom reports in a straightforward manner when conducting demos of solutions, she says.

Some solutions are better at drilling down into incidents and helping administrators understand what certain users are doing without being overly complicated.

Gartner advises implementing one brand of network firewall for all placements, including Internet-facing, virtualized, data center, and branch placements, Hils says.

Because misconfiguration accounts for the vast majority

of firewall breaches, he says, use of special, differently branded data center firewalls should be relatively rare until they can provide competitive firewalling for all enterprise placements, he says. These types of data centers can serve a niche set of placements, however, such as if the data center is a separate business with its own firewall operations staff, Hils says. **P**

Cover Cloud Needs

A key change in the firewall industry has been the growing deployment of virtual firewalls, which are important for supporting the take up of cloud platforms, says Bob Tarzey, analyst and director at Quocirca. For example, he says "you can have the same firewall on-premises on a physical appliance as you do for a cloud deployment using a virtual one."

BONUS TIPS:

Weigh The Options

Gartner Research Director Adam Hils recommends evaluating your current vendor's adequacy and worthiness. Next, update current/future needs, deliver a request for proposal to prospective vendors, and eliminate solutions that can't meet your use case before running final candidates through a proof of concept to verify they can meet feature set requirements.

Identify Needs

Many firewalls provide highly scalable performance abilities, says Info-Tech Research Group Consulting Analyst Jessica Ireland. Understanding current performance requirements and anticipating potential organizational growth can help properly spec out firewall needs to avoid overbuying. Knowing which features are needed is obviously helpful, she says.

Trim The Costs Of A Mobile Workforce

Give Employees What They Need While Maintaining Control & Saving Money

OUTFITTING AND supporting a mobile workforce can be expensive, especially when you think about the costs for mobile devices themselves and the need for increased security and network support. But because smartphones and tablets are so critical to doing business today, it's up to organizational leaders to balance mobility and costs. There are ways to cut mobile workforce costs and still provide the functionality and performance your employees need.

Only Pay For What You Need

The best way to save money with any type of technology is to only pay for what you'll use. But when it comes to

mobile devices, it's equally important to only pay for the level of performance your employees require.

"Going for what's cool can often be a temptation over what's actually necessary," says Mike Battista, Ph.D., senior consulting analyst at Info-Tech Research Group. You may not need the most advanced tablet and may be able to rely on a less expensive model that perhaps doesn't have as much power but is capable of handling all the necessary applications.

Battista warns that this same idea applies to backend management technology. "If the use case is just one specific app that's accessible from a Web browser, then do you



really need VDI to have a full desktop there? It's probably clunky on a mobile device anyway. Cut the things that aren't really necessary. There's no need to implement something because it seems cool or because it's what everyone else is doing. Look into the actual use cases for the mobile devices and see what's needed to support them."

Necessary Support & Management Solutions

Mobile device management (MDM) solutions are great for getting more control over mobile devices, but you also need to consider the software you already have.

For instance, Battista says that if your company uses a cloud service, you should encourage users to get the service's native application on their own mobile devices. If your employees are using an unmanaged application to access sensitive data, see if a

managed enterprise alternative is available. You can also take advantage of an already existing VPN connection for added security.

The main benefit of MDM is that it can "layer on top of many of these solutions to make them easier to implement or enforce," Battista says. But keep in mind that MDM won't solve every problem, so it must integrate and work together with your existing solutions.

Christian Kane, enterprise mobility analyst at Forrester, says that many MDM vendors are now expanding to add functionality for mobile application and content management. This means that companies can take advantage of the collaboration capabilities of smartphones, tablets, and laptops.

MDM coupled with other security and management solutions makes it much easier to control the flow of data and makes it possible to set a baseline of security across all

All-In-One vs. Modular

There are many different mobile device management (MDM) solutions available, but before purchasing one, you first need to decide whether you want to opt for an all-in-one solution where you pay a monthly cost or upfront licensing cost or an enterprise mobility management (EMM) type of solution, which is a bit more modular, says Mike Battista, Ph.D., senior consulting analyst at Info-Tech Research Group.

"You pay for the basic MDM and then you can layer features on top of that," Battista says. "If you don't need advanced features like the app store, the containerization, and all that, you can look for a vendor that does offer that base MDM and then wait and see. If those features are needed, then you can add them over time. There may be a bit of additional cost, but you don't have to pay for it all up front with a bundle."

apps, so companies don't have to individually manage each application, Kane says.

Regardless of whether employees use their own or company-issued devices, there is always a need for an MDM solution, Battista says.

"A lot of organizations already have some functionality there in terms of ActiveSync, being able to remote wipe a device, and push out basic security policies," he says. "But I think MDM can really save money in the end in terms of support costs and automation." Instead of relying on manual tools, automation can save money and remove burden from your IT staff.

Manage BYOD

Battista says BYOD policies can save money, because companies aren't purchasing the devices and accessories themselves but relying on employees to provide their own. However, BYOD introduces a potentially tricky balance between wanting to properly control those devices, but not wanting to "infringe on the whole point of BYOD, which is to increase productivity, freedom, and satisfaction," he says.

Generally, Battista says companies should opt for less control over BYOD when possible, so that it doesn't eliminate all of the benefits. He recommends going on an

employee-by-employee basis to determine whether that employee needs full containerization or just needs something as simple as a remote wipe capability. He says MDM solutions can help sort out some of this confusion by "automating it and making sure the separation" between business and personal "is a little clearer."

Corporate App Stores

Remember there are many costs associated with mobile devices other than purely monetary ones.

For example, viruses disguised as productivity apps can find their way onto mobile devices and then tunnel into the internal corporate network through a Wi-Fi connection.

For that reason, some larger organizations may want to consider an internal corporate app store that filters third-party apps but also includes internally developed apps and only provides apps that are supported by the company.

Battista says corporate app stores aren't a fit for every company, especially ones that don't rely on mobile apps to a large extent, but they can be helpful for businesses that use a lot of internally developed apps that are only given to employees. P

Consider Existing Or Free MDM Solutions

Before you consider buying a new mobile device management (MDM) system, look at what you already have and decide whether it can meet your needs, says Mike Battista, Ph.D., senior consulting analyst at Info-Tech Research Group. Some mobile devices already have some form of MDM built-in, whether it's remote wipe capabilities or more in-depth options, so it doesn't hurt to see if those solutions are enough for your specific purposes. If not, there are also some free solutions available that can offer basic MDM, Battista says. It's important to weigh all available options before making a purchasing decision, especially if a free alternative will meet your needs.

BONUS TIPS:

Start Small

With BYOD, start with trials and pilot programs, says Christian Kane, enterprise mobility analyst at Forrester. Start by supporting the mobile devices you are most comfortable with. Your IT department will be experienced with those devices, understand their weaknesses, and know the right level of control needed to secure them. The same approach goes

for new technologies. Make sure you are familiar with how to use management solutions. You don't have to purchase an MDM solution with every bell and whistle already intact. Instead, you can pick and choose what you currently need and then "slowly expand and tweak your policies and strategies."

Avoid Excessive Controls

It's easy to overburden employees with policy. It's important to

protect data and secure devices, but don't make it inconvenient to use those devices. "Think through policies carefully," says Mike Battista, Ph.D., consulting analyst at Info-Tech Research Group. "Don't automatically err on the side of exerting more control, because especially with BYOD, you need to balance protecting corporate data with protecting personal data, and do so without destroying flexibility and eradicating the whole point of BYOD."

What To Know Before Signing The Dotted Line

The Cloud Licensing & Contract Considerations Enterprises Should Consider

COMMITTING TO CLOUD computing isn't easy. Beyond the security and data concerns enterprises must weigh, finding the right provider can be a daunting process. Unfortunately, the process doesn't stop there, as there's the matter of settling on contract and licensing terms with the chosen provider in a manner that builds in protection for the enterprise in terms of uptime, accountability, costs, and other areas.

The following tips and suggestions can help avoid common licensing/contract mistakes, show where to focus attention, and ensure the requirements are met.

Know The Landscape

Lynda Stadtmueller, Frost & Sullivan cloud services program director, says generally cloud services don't come with negotiable contracts, which is a big appeal of the cloud in the sense that services are available on demand for as long as

the enterprise wants with no term or volume commitments. Essentially, customers pay for only what they use.

In the highly automated, self-service world in which online transactions generate cloud service subscriptions, a user simply "clicks" to accept a provider's service terms, Stadtmueller says. "Other than for managed cloud services, enterprises may not have much opportunity to negotiate specific contract terms," she says.

Stadtmueller also says, however, that most providers will work with enterprises to configure cloud environments to meet the enterprise's reliability, availability, and security needs, possibly on a specific workload basis.

Info-Tech Research Group recommends knowing where a cloud service lives. "The cloud is an amorphous abstraction, but behind it all there's real hardware, silicon, switches, and spinning disks," says John



Sloan, principal consulting analyst at Info-Tech Research Group. It's good to seek assurance on the level of compliance these facilities offer concerning various security and regulatory frameworks, he says, but you should determine who actually owns and controls the facility.

A cloud provider that's a tenant in someone else's facility can impact service guarantees, Sloan says. Often, cloud contracts contain language that indicates a provider guarantees a certain level of service for what is in its control, which can be a "big escape hatch," he says. Info-Tech generally recommends using providers that own or control their hosting facilities, though it may be worth using a "renter" if there's a significant cost benefit, say 25% less than a facility owner, Sloan says.

Read The Terms

The biggest mistake an enterprise can make is not reading

the terms it's agreeing to. This is something that's common among consumers but is now carrying over into the business world, Stadtmueller says, particularly because it's so easy for employees (not just authorized ones) to subscribe to cloud services. Failing to read terms can mean not understanding the degree of responsibility a provider is taking, she says.

For example, some infrastructure-as-a-service (IaaS) providers offer 100% availability service-level agreements (SLAs), which many users misunderstand to mean that services will never fail. "In fact, the SLA simply reflects the amount of credit and the conditions under which the provider will pay when the service is disrupted," Stadtmueller says. "This can come as a shock to customers that assume the cloud service means they don't need to engineer redundancy."

Stadtmueller says the components and time frame covered

Establish Policies

Lynda Stadtmueller, cloud services program director at Frost & Sullivan, recommends establishing policies that govern cloud subscriptions and implementing them company-wide. "You may implement a 'cloud-first' strategy for new applications or establish a marketplace of approved SaaS apps for employees to select from," she says. "IT and procurement should establish procedures for managing multiple cloud vendors to ensure consistent performance parameters and appropriate service terms."

by an availability SLA can vary widely among providers. Thus, an enterprise may experience a service disruption lasting days but find the SLA doesn't apply. She says no major cloud service provider accepts liability for lost, stolen, or damaged company data. "Customers who don't understand that are potentially risking their business," she says.

Overall, Sloan says too much stock is put into SLAs, which primarily are about providing some level of assurance of redress in event of an outage, such as billing credits. "That's nice, but it means nothing when the outage occurs," he says. "Vendors largely base their SLA penalties on what they can afford when service interruptions occur, not what you can afford. Customers often think that the SLA is a kind of club or coercive tool to get better service. It's not."

Sloan also says you should obtain clear language about what the provider will do after an outage or service degradation. For example, what's the diagnostic/recovery procedure, how is progress communicated, and what is the problem-escalation procedure if you're not getting adequate service?

Another way SLAs are generally inadequate is that most focus on simple uptime metrics, Sloan says. Arrange for annual service reviews with the provider that

have an impact on service renewal and pricing, he adds.

Have An Exit Strategy

Avoid entering a bad contract by mainly knowing the risks and being realistic about what's being contracted, Sloan says. Generally, you get what you pay for, he says.

"Cloud services aren't white-glove managed services. They are enterprise managed services that call themselves 'cloud' because it's cool, but they really aren't. Clouds are best effort, and for many workloads that's good enough. If you want more, you need to pay more, and then you find yourselves in a much more expensive proposition than what the cheap and cheerful 'cloud' appeared to be," he says.

Sloan stresses the need for an exit strategy, which he equates to a marriage prenuptial

agreement. If you cancel services with the cloud provider, know the procedures and time frames for getting data back, for example. One way customers can feel burned by providers, he says, is if the provider goes out of business and leaves customers "swinging in the proverbial wind."

Get Your Needs Met

To ensure a contract best matches the enterprise's cost, reliability, accountability, and other needs, Stadtmauer says

to first figure out your requirements. Not all workloads need the same amount of security or redundancy, she says, so approach cloud decisions on a workload-by-workload basis.

"Ideally, your chosen vendor can support multiple environments (on-premises and hosted, dedicated and shared, virtualized and bare-metal, public and private), so you can ensure each workload is in the optimal environment while controlling them via a single management system," she says. □

Do Your Homework

The barrier to cloud entry is so low, says Lynda Stadtmauer, cloud services program director at Frost & Sullivan, that many enterprises make impulse purchases without doing their homework. Conversely, "you can't enforce the same onerous procedures that govern capital investments, or your users will just go rogue, increasing the risk to the company," she says.

BONUS TIPS:

Don't Get Burned

Frost & Sullivan Cloud Services Program Director
Lynda Stadtmauer says enterprises won't get burned by a bad contract if they approach their cloud computing decisions with the same due diligence they do other IT purchases. "The good thing is that the providers' terms and conditions

are transparent. They're always posted right there on the Web," she says. To determine what might be possibly missing in a provider's terms, she advises reading, understanding, and comparing service terms (not just prices) across all vendors you're considering.

Questions To Ask

Before signing a contract with a provider, Dan Kusnetzky,

founder of Kusnetzky Group, recommends asking if the cloud provider can offer the levels of support you need when you need them, easily scale up and down to match the business, and ensure data will remain private and secure. Also determine who can see your data (and for what purposes) and how easily you can upload and download data and applications.

Manage A Warmer Data Center

Put Some Thought Into Whether You Want To Raise The Temperature, Then Have A Plan

CAN YOU SAVE money by raising the ambient temperature of your data center? If so, how much can you raise the temperature? How will equipment handle the added heat?

Your answers to those questions will help you decide the best temperature for your data center but will also bring about additional questions: What extra steps do you need to implement to monitor the data center environment? Will you be able to respond quickly enough if there's a cooling problem?

Whether you've already raised the ambient temperature in your data center or are still researching the issue, you need

a complete picture of what it will take to best manage the higher temperatures.

First Things First

“Don’t just go raising your data center temperature,” says Ian Seaton, global technology consultant at Chatsworth (800/834-4969; www.chatsworth.com). “Just because a data center has a set point of, say, 72 degrees Fahrenheit that results in 54 degrees Fahrenheit air being delivered out of cooling units doesn’t mean that it’s a *completely* cold data center.”

Seaton says it’s more realistic that, by the time that air passes through a floor tile



opening into the data center, it may be 60 degrees, and by the time it reaches some of the servers toward the top of some cabinets, it may be 75 degrees or warmer.

ASHRAE provides some guidance for determining the optimum temperature for your data center, Seaton says, including decision tree flow charts. “In this process, you cannot get past the first step until you have optimized your airflow management,” he says, “and you have an essentially perfect rack cooling index at the lowest possible standard deviation.”

Optimize Airflow

Getting to that “perfect rack cooling index,” as Seaton calls it, often requires improving data center airflow. “I think the first thing you want to do is to put all the airflow management tools in place (blanking panels, floor grommets, air dams, containment aisles or chimneys, static pressure feedback fan controls and temperature feedback

Key Points

- Optimize airflow with blanking panels, floor grommets, fan controls, and other tools.
- Install an environmental monitoring tool and track temperature at both the front and back of each rack.
- Temperature monitoring must be automated to alert personnel and take actions such as shutting down critical servers if necessary.

valve controls) and dial in to a 100% rack cooling index with a minimum server inlet temperature variation throughout the room, say no more than a 3 degrees Fahrenheit total variation—less if possible.”

Once you’ve taken those steps to optimize data center airflow and decided on the ideal temperature set point, you need to make sure you have tools and procedures in place to monitor your data center temperature.

Get Started

How do you know the optimum temperature for your data center? Ian Seaton, global technology consultant at Chatsworth (800/834-4969; www.chatsworth.com), says Appendix C of the third edition of ASHRAE’s handbook on environmental guidelines for data processing equipment provides decision tree flow charts for determining the optimum temperature.

In a nutshell, he says, if you have a 20-degree range of server inlet temperatures between the top and bottom of a rack and you want no servers to exceed the ASHRAE recommendation of 80.6 degrees, then you need to have a set point that guarantees a temperature no higher than 60.6 degrees. On the other end of the spectrum, if you have only a 2-degree variation in server inlet temperatures throughout the data center, then you can use a set point of 78.6 degrees. “In either situation, you should employ some static pressure feedback to control cooling unit fan speed and some indicator of server inlet temperatures to control valve opening.”

Michael Sigourney, president and CEO of AVTECH Software (888/220-6700; www.avtech.com), says temperature changes can be dramatic when dense IT conditions exist, which is why temperature monitoring must be automated. "Monitor both the front (inflow) and back (outflow) of each rack, because the change in temperature as air flows through a rack provides valuable information."

Pramod Dibble, energy and environment research analyst at Frost & Sullivan, takes the monitoring a step further. "Data center operators should install temperature, airflow, humidity, and pressure sensors throughout the data center and sync them up with a data center infrastructure management (DCIM) system."

Using such a system, you can remotely monitor, manage, and optimize the data center's power and cooling systems, Dibble says. Some DCIM tools can also automatically perform systems optimization and place work orders for predictive maintenance to prevent equipment failures that could lead to downtime. "DCIM systems typically pay for themselves within the year," he says.

Differing Cooling Needs

As you put steps in place to monitor and manage a data center with a higher temperature set point, remember

that different hardware will have different cooling needs, Sigourney says. "The little fan inside your server does little good if the air around the server is 80 to 100 degrees Fahrenheit. If the equipment or air around it is hot, then the temperature inside the device will be extremely hot."

Seaton says most servers today fall into what ASHRAE calls the A2 server category with an allowable maximum temperature limit of 95 degrees. "For those emergency situations where the 80.6-degree threshold cannot be maintained, your equipment will be just fine living for a short period of time at the elevated temperatures within the allowable range."

ASHRAE provides a precise methodology for calculating a definition of "short period of time," he says, "but needless to say, we're talking days here and not minutes." □

Action Plan

Set the temperature. ASHRAE recommends a data center temperature of 80.6 degrees Fahrenheit, but keep in mind that it's simply a recommendation. The ideal data center temperature can vary based on equipment density, airflow issues, and perhaps even your own comfort level.

Put monitoring in place. Regardless of your temperature set point, you need an environmental monitoring solution to monitor temperature and other conditions. Michael Sigourney, president and CEO of AVTECH Software (888/220-6700; www.avtech.com), says an advanced environmental monitoring solution will include hardware to monitor conditions and software to alert appropriate personnel in real-time and automatically take corrective actions to reduce or resolve any impact from changing conditions.

Know what's happening. "If a manager does not know what is really happening with temperature in their data center, then it is pretty much impossible to make an educated decision as to whether it makes sense to raise or lower temperatures—they might just as well flip a coin," Sigourney says.

Top Tips

Remember the fans. "As you raise the data center temperature, remember that a lot of servers have fans that sense temperature as well," says David Cappuccio, research vice president at Gartner. You'll need to monitor the temperature set point and adjust those fans, if possible, so they don't try to compensate when you raise the temperature. "Otherwise, they can negate any savings because they're running all the time," he says.

Thoughts on redundancy. Ian Seaton, global technology consultant at Chatsworth (800/834-4969; www.chatsworth.com), says if temperature management is done within a total system approach, it should not have a bearing on redundancy decisions. "Facility redundancy should depend on the overall availability mission of the data center and what kind of downtime it can tolerate."

Choose & Implement A Videoconference Solution

Make Sure You Have Solid Reasons For Adoption, Then Focus On Quality & Ease Of Use

IF YOU WORK AT a larger enterprise, videoconferencing may already be part of your daily workflow and communication. However, if you're building a small to medium-sized business or looking to enhance the capabilities of your unified communications platform, implementing a videoconference solution is probably high on the priority list.

Rolling out business-wide videoconferencing involves more than installing new software on company machines, so let's take a look at all the elements that go into supporting digital face-to-face conversation.

Know What You Are Signing Up For

Video cameras are embedded into practically every computing device and interface now, thanks to the mobile revolution, but just because your workforce

has the equipment it needs to video chat doesn't mean you're ready to seamlessly transition to videoconferencing.

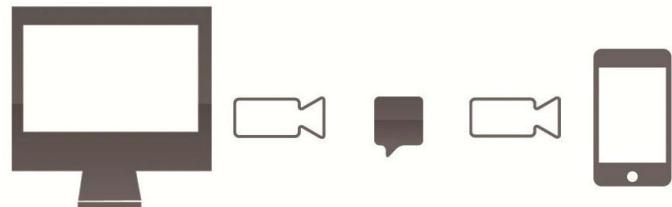
Andrew Davis, senior partner at Wainhouse Research, says businesses looking for new solutions should focus three equally important standards: quality, ease of use, and connectivity.

"Quality is important because, without it, the whole idea makes no sense. You want to be able to see and hear the other people, and they will want to see you," Davis says.

"Ease of use is important because, without it, people won't use the solution. And if the interface is complicated, you will forget how to use it unless you use it all the time." Davis says connectivity for an SMB means you need to be able to make business-to-business calls.

Get Started

Before you decide to take video communications to the next level, it's important that you have a well-defined use case, according to Rich Costello, senior research analyst at IDC. Costello says instead of implementing a videoconferencing solution simply because it's the next thing to do, decision-makers should ask, "What do we need video for? Are we trying to solve a problem?" Consider how adding the capability will improve processes. "I think it's really expanded beyond [face-to-face connection], where companies are looking to integrate video into something that they do, like a key business process to enhance that process."



Rich Costello, senior research analyst at IDC, says cost, support, and expertise should also be major considerations. Beyond knowing what your SMB can budget for and support for a first-time implementation, Costello says, "video can be tricky [and] you need that level of expertise, if you will, internally to do the mechanics."

Impact On The Network

The demand placed on your network bandwidth will largely depend on what your current network can handle, the capabilities of the videoconferencing solution you implement, and how many users connect at the same time.

"[Many] businesses have a telephony system and do voice (and maybe IP), and they may have the network in place to support IP-based communications," Costello says. "We're talking about real-time communications, and now you have video, which is

Key Points

- Quality, ease of use, connectivity, cost, support, and expertise are all key factors when implementing videoconferencing solutions.
- Know what your network can handle so you can ensure the A/V enhances communication.
- Using a service provider allows your company to take advantage of cloud-based collaboration features.

significantly more bandwidth-intensive. Obviously you want to have a good experience, good video quality, and good audio quality."

Davis agrees that if you are a small businesses, "most of your conferencing will involve your Internet connection, and this should be made as robust as possible." He adds that high-definition videoconferences can run at 768 or 512Kbps within most network constraints.

What To Know About VCaaS

If your business lacks the funds and personnel to support a from-the-ground-up videoconferencing implementation, you can consider the rapidly multiplying offerings in the videoconferencing-as-a-service (VCaaS) market.

In terms of simplicity, VCaaS lets the platform do the work for you. When you allow a VCaaS solution to have access to your endpoints, the service provider can determine the needs of your network infrastructure and organize virtual meetings for end users.

Expect to choose from conferencing options such as room-to-remote meetings, scalable cloud-based video connectivity, and mobile collaboration over cellular networks. Additionally, it's important to look for interoperability, content sharing capabilities, and support for video uploads.

Wainhouse Research's Davis recommends researching VCaaS providers in order to address the aforementioned standards of quality, ease of use, and connectivity.

Look Down The Road

Although the video market has been relatively conservative until recently, Costello says, it's now "coming out of the room and going to the desktops."

But the conference-room-to-end-user transition isn't where

this evolution stops: videoconferencing is moving from a hardware-centric model to a software- and applications-based model, he says.

Now that users are adding content to browser-based video, sticking with outdated boardroom-only conference operability may limit your workforce's ability to use more advanced or streamlined collaboration tools.

"If I'm at my desk, I can use a Web browser to join some of these calls. It's really kind of neat," Costello says. "An older solution may support this and it may not. You want to be prepared for what's coming down. The market is really changing." **P**

Action Plan

Assess your video needs. To what extent do you currently utilize videoconferencing in your business? What capabilities would help your workforce communicate more effectively and stay consistently productive?

Test your network capacity. Determine if your network is ready to support heavy content sharing and real-time high-definition video meetings. Add bandwidth as necessary.

Decide whether to go on-premises or as-a-service. Do you want to deploy and maintain a new solution using the hardware and resources you already have? Or would you rather pay for a cloud service on a monthly basis to avoid the dive into your infrastructure? If the latter is preferred, consult with videoconferencing-as-a-service vendors and find out how you can customize your videoconference solution.

Top Tips

Consider polling your workforce. Because a videoconference implementation directly affects how your workforce will interact, it's wise to consult employees before you make an investment. Rich Costello, senior research analyst at IDC, says to poll end users with questions such as, "Would you use it? Would you not use it? Would you prefer to only use voice services?"

Focus on features and support. "If you are installing a system in a conference room, there are lots of things to think about: room furniture layout, sound, lighting, HVAC noise, window treatment, etc.," says Andrew Davis, senior partner at Wainhouse Research. "But most of the equipment today provides very similar levels of audio-video performance, so the distinctions circle around features (dual screens, content sharing, pan-tilt-zoom cameras, etc.)."

Don't hold on to the past. According to Davis, you're essentially risking your reputation by not implementing a videoconferencing solution. "You are making a statement that you are locked in the 1980s, are not a cool company to work for, and are not making investments in technology that make your employees more productive, speed up team-building and decision-making, and improve work-life balance."

Build A Data Loss Prevention Strategy

Don't Allow Your Sensitive Information To Get Into The Wrong Hands

WITH SO MANY stories about breaches and data loss in the news recently, it's important to take a look at your company's overall approach to security and determine if you're doing enough to protect your data.

One way to improve security and prevent data leakage is to implement a data loss prevention (DLP) solution, but you can't stop there. You also need to develop specific strategies to support the DLP system and then use technology to enforce policies.

People, Process, Technology

When developing a DLP strategy, it's important to understand how a data breach can impact the company from multiple angles.

Regardless of whether a data leak is unintentional or the result of an outside attack, it can "expose your organization to far-reaching financial, public

relations, legal, and brand reputations costs," says Alan Tang, senior consulting analyst at Info-Tech Research Group.

For this reason, he recommends taking a three-pronged approach to DLP to help protect your company from every angle.

The first aspect is people. Tang says you should not only include the security team in the loop, but also make sure your HR, legal, enterprise risk management, and audit teams "are getting engaged and on the same page." The more employees are aware of data leak risks and how critical DLP is to the organization, the better.

The second prong is the process side, which means the company needs to "establish a formal security incident response process that should be integrated with the enterprise incident management, business



continuity, and disaster recovery processes," Tang says.

And the final part is the technology side in which you choose a DLP system that will meet your security needs.

DLP Features To Look For

Eric Ouellet, research vice president at Gartner, says that the DLP solution you choose depends on what types of data you're looking to protect.

For instance, if you want to protect against losses with USB drives, Dropbox-style online storage solutions, or other elements that are sourced from an endpoint, the best approach is to look for DLP that's available on the endpoint, Ouellet says.

You can also focus primarily on discovery within your organization and use a DLP system to detect whether there is sensitive information stored in different sections of your company.

Another type of DLP exists at the perimeter and is designed

Key Points

- Consider the people, processes, and technologies involved in data loss prevention (DLP) to fully protect your company.
- Look for tools that will prevent data leaks and consider mobile device management solutions with DLP built-in.
- IT can implement the DLP solution, but the business unit that controls the protected data needs to manage it.

to prevent sensitive data from leaving the company as a whole. A major aspect of this type of DLP deals with email.

You can look for content-aware DLP solutions that have automated features where the system can actually detect whether there's a credit card number, Social Security number, or some other sensitive data in an email and will automatically encrypt it or prevent it from being sent.

Get Started

The best way to get started with data loss prevention (DLP) is to not "boil the ocean," says Eric Ouellet, research vice president at Gartner. Ouellet says that too often organizations will look at a DLP solution, see that it has 200 different policies and then decide to "turn them all on, so we don't have to worry about anything anymore." He says that doing so will start digging a deep hole, and that instead you should make your DLP approach more focused and simpler. Then, once it's established and you can clearly see all of the events that are generated by the system, you can start building on from there.

Ouellet says automated features are particularly important because they can counteract “oops moments” in which an employee might be multi-tasking and accidentally let sensitive information slip through an email.

DLP In A Mobile Environment

Mobile devices have introduced a new level of risk in terms of data loss and leakage.

“With the nature of the mobile devices, which are easier to lose than laptops, data protection becomes critical even after the device is lost,” Tang says.

He adds that mobile devices are often processing data at a rapid pace, so it’s important to learn how to not only control the data stream to and from these devices, but also determine just how much access that device has to your company’s sensitive data.

Andras Cser, vice president and principal analyst at Forrester Research, says that specific DLP solutions designed only for mobile devices are rare, and instead “most mobile device management [MDM] and mobile application management [MAM] vendors offer some kind of DLP functionality.”

MDM solutions will also help give you more controls over mobile devices in areas other than DLP and help you better secure smartphones and tablets as a whole.

Know Your Role

Ouellet stresses the importance of knowing who should be in control of the DLP solution itself. He says that when you’re looking at content-aware DLP, you have to “make sure it’s not an IT-centric deployment, meaning that it’s not managed just by someone within IT.”

He says the IT team can certainly implement the technology, but it doesn’t have a role in the management process because it can’t accept risk on behalf of the business.

“What that means is that when an incident occurs, it really needs to be reviewed by someone on the business side who is responsible for that particular type of data,” says Ouellet. □

Top Tips

Properly handle user access. Andras Cser, vice president and principal analyst at Forrester Research, says you need to perform periodic user identity audits or attestations during which you review the entitlements of employees and application owners as well as their access to structured and unstructured data. And to make sure users aren’t accessing information they shouldn’t, you can also use “behavioral-based scanning that understands the user’s past behavior and anomalies,” says Cser. “Comparing the user’s behavior to his or her peer group is also useful here.”

Choose the right data to protect. Alan Tang, senior consulting analyst at Info-Tech Research Group, recommends that companies look at the information stored throughout the company and understand that only some data is critical to the organization, which means not all of it needs to be protected in the same way. “In order to save you time, money, and grief, it is very necessary to classify your data based on its value,” he says. “For instance, classify data into top secret, secret, confidential, internal use, and public.”

Action Plan

Education. Make sure your employees, regardless of department, understand the importance of data loss prevention (DLP) and what they can do to help prevent data loss and leakage.

Implementation. Consider what types of data you are trying to protect as well as the data source itself. Deploy either an endpoint, perimeter, or discovery-based DLP solution to protect your company from every possible angle.

Start small, then expand. Focus on protecting only the most important mission-critical data first before moving out from there. You have to establish a baseline and get in some practice before going full-scale.

Never stop learning and evolving. No security solution can be considered a set-it-and-forget-it technology. As new messaging and storage technologies evolve, your DLP system needs to evolve along with them. Make sure your data is always reflected regardless of where it’s stored and located.

BUYING TIPS: Servers

WHEN BUYING A new server, you have to know much more than just your enterprise's current and future needs. Budgets, compatibility, and vendor considerations also come into play.

Above all, you need to understand when it's time to buy new servers. As with any IT purchase, the goal should always be to invest in a solution that will meet performance needs for years to come.

Determine Features You Need

Charles King, president and principal analyst at Pund-IT, says CPUs, memory, and I/O are the most critical server features, though their relative importance depends on the application and workload. Companies running a business-critical database or online transaction program, for example, should eye a higher-end CPU/system than what's needed for general-purpose applications. For virtualization-related use, spend more for extra memory and I/O.

Mark Bowker, Enterprise Strategy Group senior analyst, says that too often, buyers purchase a server with more capacity than needed, which provides the comfort of extra headroom but adds expense. At the same time, though, you want to future-proof your investment as much as possible by looking for efficient, power-saving servers that can help lower energy costs in the short and long term.

"IT should understand what the latest processor chipset is on the market and what the stated road map of the chip manufacturers are," Bowker says. "This will help avoid buying into servers that are at the end of a product life cycle."

Tau Leng, Ph.D., vice president and general manager of corporate marketing and HPC solutions at Supermicro (408/503-8000; www.supermicro.com), says today's server systems are available with a variety of processor technologies and form factors. "Customers often purchase equipment that is overdesigned with unnecessary features," he says, which is why it's essential you work with an experienced and reliable partner that can offer a variety of solutions.

In addition, Leng says, adherence to standard rack unit is important to allow for easy interchange of servers. Remote management features also are critical, and power savings is becoming an important element in TCO determinations.

Consider Your Budget & The Total Cost Of Ownership

Before you get started with a server upgrade or replacement, be sure to carefully plan your budget. Don't forget that the total cost of ownership includes many different items beyond just the upfront server cost.

Possible expenditures include equipment, software licensing,



labor, telco and power company services, facility improvements, vendor support, and downtime. Additional costs related to supporting a new platform can include those for power, network cabling, cooling, rack space, and management personnel, he says.

"In any infrastructure purchase, the upfront capital acquisition cost is just part of the deal. Three- to five-year total costs should be calculated, including maintenance and facilities costs," says John Sloan, principal consulting analyst at Info-Tech Research Group.

Watch For Trends

Leng says one relatively new trend in servers is high-temperature free-air-cooled server environments, which can reduce electricity demand and rein in costs.

Virtualization and consolidation are also having an impact. Sloan says it's important to know how a server will fit into a consolidated stack that includes servers, networks, and storage.

Unlike distributed models, Sloan says, "in a consolidated infrastructure, the server is a unit of hard capacity (processing and memory) that's combined with networks and storage in a resource pool that's partitioned up into virtual entities." Increasingly, he says, enterprises aren't buying servers, but blocks of capacity.

What differentiates current offerings "is how the interconnects are managed and how the whole thing is managed as one resource pool," Sloan says. Typically, blade servers are the form factor for consolidated offerings, he says. □

CHECKLIST

Match needs, requirements. Make sure the application and workload the server will support aligns with the CPU, memory, I/O, storage, and other components you plan to purchase.

Spot upcoming trends and know how you'll use them. Virtualization, consolidation, and cloud computing are trending areas where servers are concerned. How will these trends impact your data center and the servers you purchase, both now and in the future?

Check your vendor. Ensure the vendor you plan to buy from satisfies all questions concerning support, compatibility, performance, and other issues.

BUYING TIPS:

Equipment Recycling & Disposal Services



THERE'S SO MUCH TO DEAL with when it comes to old equipment. Can you reuse or repurpose it? Or do you need to just get rid of it? If that's the case, a vendor can help you ensure equipment is handled in an environmentally responsible manner while abiding by privacy and compliance regulations. Here's what to look for.

Know Your Equipment & Needs

Be sure you understand your equipment and the capabilities of the recycling company.

"Can your equipment be recycled whole, or must it or parts of it be destroyed? How are you going to handle hard drives or other media devices? Are you going to remove them yourselves and destroy them prior to recycling, or is the service qualified to destroy them for you?" says Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com). Be sure any servers have all your data removed, he says, and consider pulling and destroying the data drives prior to recycling.

Check Facilities, Processes

Koty says you want a reputable company with a good track record. Find out how long the vendor has been in business and ask for (and check) a list of previous clients.

Don't just look for the least expensive service provider, Koty says. He recommends

visiting the firm and inspecting its procedures. Check what security and surveillance the vendor uses, how it can assist with ROI for current projects, and what documentation processes it uses.

Find out how equipment is picked up and handled, who pays for shipping, where equipment ends up, when you will get paid, and if the vendor can assist in other ways such as providing new products or offering credit from old equipment. Know if the vendor has downstream vendors and who they are.

"If you have specific needs for the way equipment is destroyed, ask for a certificate of destruction as verification of the service provided," Koty says. "Even if the outside firm produces all the proper paperwork and has a good sales pitch, there could still be liability issues for the data center if the firm doesn't follow proper disposal procedures."

Onsite vs. Offsite

With data destruction, you have two choices: onsite or offsite. With an onsite service, you won't have to deal with chain of custody. If your data center stores sensitive data and wants to physically destroy it, you'll have peace of mind from watching the destruction.

If you want absolute destruction, consider offsite data

destruction as service providers typically have more powerful shredders at their facilities than mobile shredder services can offer, plus some offsite data destruction services also double as a reprocessing center that can remarket the parts, providing return value.

What About Liquidation?

One alternative disposal process is liquidation, and, more specifically, choosing a credible vendor with a proven track record to manage a private auction marketplace. Typically this is a third party service provider that handles vetting buyers, reselling equipment, and streamlining monetary returns.

According to Howard Rosenberg, CEO at B-Stock Solutions (866/993-6757; www.bstocksolutions.com), "liquidation leads to a couple great outcomes: one, reuse, which is the ultimate in sustainability and, two, revenue, which is something any business appreciates."

Rosenberg says manufacturers should consider liquidation if they have a meaningful quantity of distressed inventory; if they currently liquidate this excess by traditional means (or have never liquidated at all); if they care about protecting their brand by carefully managing the distribution of distress goods; or if they care about profitability. **P**

CHECKLIST

Do your homework. Compile a list of equipment you no longer need, then determine its resale value, who might purchase the equipment, and how the resale value can help fund purchases.

Check for qualifications. Determine how long the prospective vendor has been in business, what its reputation is in the industry, and what compliance and certification measures it operates by and has achieved.

Know the difference between a broker or provider.

Determine if the vendor actually provides recycling and disposal services or is just a broker of such services.

Understand the process. Know how the vendor processes equipment, including who handles equipment, where it goes, how long processing takes, and what documentation you can expect.

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Configuring & Managing SharePoint 2010

June 9

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McLean, Va.
www.dcnewhorizons.com

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June 12

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www.aitpdc.org

DatacenterDynamics Converged San Francisco Bay Area

June 17

Santa Clara Convention Center
Santa Clara, Calif.
[www.datacenterdynamics.com
/conferences/2014/san-francisco-2014](http://www.datacenterdynamics.com/conferences/2014/san-francisco-2014)

Configuring, Managing & Troubleshooting Exchange Server 2010

June 23

New Horizons Washington, D.C.
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Washington, D.C.
www.dcnewhorizons.com

AITP Akron

June 24

Akron, Ohio
www.akron-aitp.org

AITP Twin City

June 26, 7 p.m.

Ozark House Restaurant
704 McGregor St.
Bloomington, Ill.
www.aitp.org/members/group_content_view.asp?group=75779&id=125369

AITP Long Island - Annual Boat Trip & Meeting

June 27, 11:30 a.m. to 4 p.m.

The Lauren-Kristy
Bay Shore, N.Y.
www.AITP-LI.org

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AUGUST

AITP Pittsburgh Golf Outing Scholarship Fundraiser

Aug. 2, 7 a.m.

Butler's Golf Course

800 Rock Run Road

Elizabeth, Pa.

www.aitp-pgh.org/golf-outing.html

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Core Solutions of Microsoft Exchange Server

Aug. 4

New Horizons Greensboro

7019 Albert Pick Road, Suite B

Greensboro, N.C.

www.nhgoldsboro.com

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Aug. 14

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SEPTEMBER

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Sept. 10

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www.aitp-wheeling.org

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SharePoint TechCon

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Boston, Mass.

www.spotechcon.com

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Sept. 18, 7 p.m.

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Solutions Directory

Here are brief snapshots of several companies offering products designed for the data center and IT industry. Listings are sorted by category, making it easy for you to find and compare companies offering the products and services you need.

You can find more detailed information on these companies and the products they offer inside this issue.

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PHYSICAL INFRASTRUCTURE



ITWatchDogs

ITWatchDogs manufactures environmental monitors that help prevent downtime from climate- and power-related issues. Its Web-enabled monitors let users keep an eye on remote conditions from a secure Web interface and receive SNMP, email, SMS, and voice call alerts when specified alarm thresholds are exceeded for external factors, including temperature, humidity, airflow, power failure, smoke, water detection, and more.

Products Sold:

- Climate monitors
- Power monitors
- Digital and analog sensors
- IP surveillance cameras

(512) 257-1462 | sales@itwatchdogs.com | www.itwatchdogs.com

PHYSICAL INFRASTRUCTURE



HM CRAGG

Quality People. Quality Power.

As an integrator and master distributor providing quality power solutions, HM Cragg has built a reputation as the company that delivers innovation to aid and satisfy its customers. HM Cragg was founded in 1968 and is 100% employee-owned, focusing on quality people and exceptional products.

Products Sold:

- AC and DC power solutions (UPSSes, power distribution)
- Control and monitoring (environmental and power)
- Connectors and cables (cord sets, ePDU cables)
- Cooling and Racks (airflow management, portable cooling)

(800) 672-7244 | www.hmcragg.com

PHYSICAL INFRASTRUCTURE



Atlas has specialized in portable air conditioning since 1979 and leads the industry in server room and data center portable cooling. We offer "24/7" response from company-owned, full-service offices around the country, each stocked with a wide inventory of equipment for primary, supplemental, or emergency cooling. All portable items are available for sale or rental. Atlas is a Preferred MovinCool® Distributor and a GSA Certified MAS Contractor.

Products Sold:

- 1-5 ton portable air conditioners, air and water-cooled
- 12-ton portable coolers designed to roll through a standard doorway
- Ceiling-mount air conditioners – full line of MovinCool® packaged a/c units

(800) 972-6600 | www.AtlasSales.com

PHYSICAL INFRASTRUCTURE



PDU Cables is the leading supplier of power distribution cables assemblies to data centers in North America. PDU Cables has been serving this industry since 1981 and is the first independent cable assembly company to introduce colored conduit into the power distribution cable market, the first to get UL 478 listing, and the first to introduce the Power Cable and Equipment Configurator software tool. The company is centrally located in Minneapolis, Minn., allowing it to offer 24-hour turnaround and shipping time of just one or two days to almost any United States destination.

Products Sold:

A range of power cables, cable seals, and power cord assemblies.

(866) 631-4238 | www.pducables.com

PHYSICAL INFRASTRUCTURE



Black Box is a leading technology product solutions provider that helps customers build, manage, optimize, and secure their networks. The company is a single source for cabling, cabinets and racks, localized cooling, power and surge protection, environmental monitoring, and more. Black Box also offers a best-price guarantee and FREE, live, 24/7 U.S.-based Tech Support.

Products Sold:

- Acoustic IT Enclosures
- Cabinets & Racks
- Cables & Patch Panels
- Console Servers
- Cooling
- Datacom
- Industrial
- Infrastructure Hardware
- KVM
- Networking
- Power
- Remote Monitoring

(877) 877-2269 | www.blackbox.com

PHYSICAL INFRASTRUCTURE



Server Technology is committed to the PDU market with the largest group of engineers dedicated to power distribution and other solutions within the equipment cabinet. Advancements in device power monitoring help data centers monitor and improve their efficiency, and continuous research and development is fueled by companies that look to Server Technology for their custom cabinet power solutions.

Products Sold:

A complete line of cabinet PDUs, including Per Outlet Power Sensing (POPS), Rack Mount Fail-Safe Transfer Switch, Console Port access with remote power management, Switched, Smart, Metered, Basic, and -48 VDC

(800) 835-1515 | www.servertech.com

PHYSICAL INFRASTRUCTURE



BayTech was founded in 1976 and, since the 1990s, has developed unique products for remote power management. The company uses printed circuit board instead of wires for a better, more resilient connection between the data center equipment and the receptacle. BayTech provides an extensive Web site with brochure downloads, warranty information, and reseller support and also offers evaluation units for data centers.

Products Sold:

- Power control, distribution, management, and metering
- Power transfer switches
- Console management and remote site management

(800) 523-2702 | www.baytech.net

PHYSICAL INFRASTRUCTURE



LINDY USA specializes in cables, adapters, electronics, and accessories for computer, networking, and audio video applications. Since 1932, Lindy has supplied high-quality interconnects to customers in commercial, telecom, and residential markets. What sets us apart is our complete dedication to innovation, performance, and reliability. Our cabling products are truly outstanding.

Products Sold:

• Networking Products	• Audio / Video	• KVM
• Sharing, Converting, Extending	• USB and FireWire	• Input Devices
• Hardware and Security	• Add-On Cards	• Power
• Cables	• Adapters	• Much more!

(888) 865-4639 | www.lindy-usa.com

PHYSICAL INFRASTRUCTURE



RackSolutions has been serving the data center market for more than 10 years. All of our products are designed, engineered, built, and shipped under our own roof. We have product solutions available for every major OEM, but if one of our existing products doesn't fit your needs, our top-notch mechanical and electrical engineers can create the item you need from scratch, solving even the toughest installation design challenges. Best of all, we typically don't charge up-front fees for design services.

Products Sold:

- Computer Server Racks
- Cabinets and Shelves
- Mounting Products

(888) 903-7225 | www.racksolutions.com

PHYSICAL INFRASTRUCTURE



Based in New York City, Hergo Ergonomic Support Systems is an independent designer and manufacturer of enclosure cabinet solutions, technical computer furniture, and modular racking systems. The company's products are designed to promote organization in the workspace and to increase the productivity of computers, peripherals, and communications equipment. Hergo is known for its high-quality products and superior customer service.

Products Sold:

• Racks	• Computer desks
• Enclosures/cabinets	• Cable management
• Motorized workstations	• Power management
• Flat-panel arms	

(888) 222-7270 | www.hergo.com

PHYSICAL INFRASTRUCTURE



Total Cable Solutions (TCS) provides a wide range of products from copper keystone jacks to custom bundled fiber cables. All products are manufactured with TCS' highest quality, in factories that are ISO-9001 and TUV Certified. All of our cable lines meet or exceed EIA/TIA RoHs standards.

Products Sold:

- Fiber patch cords
- Pre-terminated multi-fiber trunk cables
- CAT5e and CAT6 patch cables
- Fiber and copper patch panels

(888) 235-2097 | www.TotalCableSolutions.com

PHYSICAL INFRASTRUCTURE



Sensaphone has been designing and manufacturing remote monitoring systems for more than 25 years and has more than 300,000 of its products in use. Sensaphone's product lineup offers a full range of devices with a broad number of features and applications designed to monitor your entire infrastructure and alert you to changes. All product engineering functions, including hardware and software design and circuit board layout and assembly, are performed at the Sensaphone facility in Aston, Pa.

Products Sold:

Remote monitoring solutions that provide email and voice alarm notification for problems related to temperature, humidity, water detection, power failure, and more.

(877) 373-2700 | www.sensaphone.com

STORAGE

iStarUSA® Group

Boasting more than 20 years of experience in the industrial computing market, iStarUSA Group has made its mark in the design and manufacture of rackmount chassis, industrial power supplies, data storage, enclosed cabinets and racks, and custom power solutions. The group reaches a number of vertical markets via its four divisions: Claytek, iStarUSA, RaidAge, and Xeal.

Products Sold:

- Claytek: Racks and enclosures
- RaidAge: Data storage
- Xeal: Industrial power
- iStarUSA: Industrial chassis

(888) 989-1189 | www.istarusa.com

MESSAGING & TELEPHONY



3CX was founded in 2005 by entrepreneur Nick Galea who saw the need for an open standard software PBX for Microsoft Windows. With 86.7% of businesses using Windows as their operating system, the need for a software-based phone system which runs on Microsoft Windows was evident. 3CX maintains a global presence with offices around the world, including the United States, the UK, Germany, France, Japan, and Cyprus, as well as fully localized websites available in more than eight languages. 3CX has been selected by leading companies and organizations worldwide to meet their unified communications and telephony requirements, including Boeing, Pepsi, Harley Davidson, Hugo Boss, American Express, and Toshiba.

Products Sold:

- Full range of VoIP telephony software products

(404) 465-3660 | www.3CX.com

SERVERS

CHENBRO

Chenbro is a leader in enclosure solutions, selling its products primarily to system integrators and OEM and channel partners. The company's extensive research and development efforts help it to keep its competitive edge and maintain market leadership, with special focus on thermal, EMI, and acoustic solutions. Taiwan-based Chenbro has offices in the United States, UK, The Netherlands, and China.

Products Sold:

- A comprehensive line of PC chassis, server/workstation chassis, rackmount chassis, and HDD enclosures.

(909) 947-3200 | www.chenbro.com

SERVERS



Supermicro® (NASDAQ: SMCI), the leading innovator in high-performance, high-efficiency server technology, is a premier provider of advanced server Building Block Solutions® for enterprise IT, data center, cloud computing, HPC, and embedded systems worldwide. Supermicro is committed to protecting the environment through its "We Keep IT Green®" initiative by providing customers with the most energy-efficient, environmentally-friendly solutions available on the market.

Products Sold:

- Servers
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- Chassis
- Network switches
- Storage solutions
- Blade servers
- GPU servers
- Embedded

(408) 503-8000 | www.supermicro.com



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- Web with Spider
- Engine for Win & .NET
- Engine for Linux

(800) IT-FINDS | www.dtsearch.com



DoubleSight is a leading manufacturer of multiple monitor solutions, portable monitors, large monitor displays, digital signage, and monitor mounting solutions.

Products Sold:

- Dual Monitors
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- Single Monitor Flex Arms
- Multi Monitor Flex Arms
- Flex Stand Accessories
- Flex Arm Accessories
- Single Monitors
- Smart USB Monitors
- Accessories/Power Supplies
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An Easy, Affordable Way To Monitor & Manage Power

Server Technology Sentry Power Manager Provides The Data, Alerts & Analytics You Need

POWER IS STILL KING when it comes to the top concerns data center managers have as they work to keep their data centers, the equipment inside them, and their enterprises as a whole up and running.

Calvin Nicholson, senior director of software and firmware at Server Technology, says there are other concerns, including increased cabinet densities, demand for more computing power, and the need to locate stranded capacity. But many of those concerns all center around being more efficient in the way a data center uses its power.

"Power costs are going up, and availability is going down," he says. Overcoming those conflicting issues requires a way to better manage and control the power your data center uses.

Use Power More Efficiently

Server Technology's Sentry Power Manager (SPM) helps ensure you're using power in the most efficient way possible. SPM's capacity planning and predictive features help you spot stranded capacity and help you know if and when you might run out of power.

"If you're not monitoring power, how do you know how much you're using compared

to availability," he says. "If you have available capacity, you can put off a decision that could cost you thousands of dollars for colo space or up to millions of dollars for a new data center build."

Sentry Power Manager provides a way to measure, monitor, and trend data center power information in one central location. The product comes in both a standalone appliance and virtual version.

Easy To Set Up & Configure

With SPM's SNAP feature, you put in an IP range and SPM discovers the installed CDUs—regardless of manufacturer or whether it's just a few or thousands—and brings the information back into the SPM interface.

You can configure cabinets and locations and get a global view of your data center floor and CDUs or quickly drill down to an individual cabinet or CDU. You can group and cluster outlets together across IP addresses, rows of cabinets, or the whole data center.

Use the dashboard to configure email alerts, SNMP trap forwarding, and alarms based on the power and environmental thresholds you set. Plus you'll have a central location for managing alarms.

Using the dashboard, you can configure your own NOC view, Nicholson says, picking views, alerts, and alarms to see on the main screen. Different users can configure different NOC views.

Such capabilities give you a way to balance power usage across lines and manage power in your power system. You can also see total power usage for a single cabinet or a whole data center, or if a cabinet is configured for redundancy, when it's running too hot.

With SPM's scheduled reports, you can automatically generate system reports and have them sent via email to a list of recipients. You can even turn certain devices to on or off as demand fluctuates, opening up the possibility for radical power savings, Nicholson says.

When you're looking at server racks, you can see which are offline, looking for power issues in a full cabinet and have the ability to turn them on or off as demand fluctuates, or if you're trying to add a new device and can also see which power cabinets have available power," he says. SPM can then alert you to the data you need. ■

Server Technology
Quality Rack Power Solutions
www.servertech.com

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